

#### OPTIONAL DETERMINATION OF NON-SIGNIFICANCE (DNS) NOTICE MATERIALS

The attached materials are being sent to you pursuant to the requirements for the Optional DNS Process (WAC 197-11-355). A DNS on the attached proposal is likely. This may be the only opportunity to comment on environmental impacts of the proposal. Mitigation measures from standard codes will apply. Project review may require mitigation regardless of whether an EIS is prepared. A copy of the subsequent threshold determination for this proposal may be obtained upon request.

File No. 17-106477-LO

Project Name/Address: COBU – Upper Kelsey Creek Stream Channel Improvement

Planner: Reilly Pittman

Phone Number: 425-452-4350

Minimum Comment Period: April 6, 2017

Materials included in this Notice:

$\boxtimes$	Blue Bulletin
$\boxtimes$	Checklist
$\boxtimes$	Vicinity Map
$\boxtimes$	Plans

Other: Wetland and Stream Reports, Floodplain memo

#### OTHERS TO RECEIVE THIS DOCUMENT:

- State Department of Fish and Wildlife / Sterwart.Reinbold@dfw.gov; Christa.Heller@dfw.wa.gov;
- State Department of Ecology, Shoreline Planner N.W. Region / <u>Jobu461@ecy.wa.gov</u>; <u>sepaunit@ecy.wa.gov</u>
- Army Corps of Engineers Susan.M.Powell@nws02.usace.army.mil
- Attorney General ecyclyef@atg.wa.gov
- Muckleshoot Indian Tribe Karen.Walter@muckleshoot.nsn.us; Fisheries.fileroom@muckleshoot.nsn.us



**Phantom and Larson Lakes** 

City of Bellevue Shoreline Master Program



THE WATERSHED COMPANY



Streams

🚜 Wetlands



- Ordinary High Water Mark

Shoreline Associated

Lakes

🤝 Highwaγs ~ Major Streets

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#### **SEPA** Environmental Checklist

#### Purpose of checklist:

The City of Bellevue uses this checklist to help determine whether the environmental impacts of your proposal are significant. This information is also helpful to determine if available avoidance, minimization or compensatory mitigation measures will address the probable significant impacts or if an environmental impact statement will be prepared to further analyze the proposal.

#### Instructions for applicants:

This environmental checklist asks you to describe some basic information about your proposal. Please answer each question accurately and carefully, to the best of your knowledge. You may need to consult with an agency specialist or private consultant for some questions. You may use "not applicable" or "does not apply" only when you can explain why it does not apply and not when the answer is unknown. You may also attach or incorporate by reference additional studies and reports. Please make complete and accurate answers to these questions to the best of your ability in order to avoid delays.

The checklist questions apply to all parts of your proposal, even if you plan to do them over a period of time or on different parcels of land. Attach any additional information that will help describe your proposal or its environmental effects. The City may ask you to explain your answers or provide additional information reasonably related to determining if there may be significant adverse impact.

PLEASE REMEMBER TO SIGN THE CHECKLIST. Electronic signatures are also acceptable.



#### A. Background [help]

- 1. Name of proposed project, if applicable: <a href="[help]">[help]</a>
  Upper Kelsey Creek Stream Channel Improvement Project
- 2. Name of applicant: <a href="[help">[help]</a>
  City of Bellevue Utilities Department
- Address and phone number of applicant and contact person: [help]
   Jerry Shuster, City of Bellevue Utilities Department
   450 110<sup>th</sup> Avenue NE
   Bellevue, WA 98004
   (425) 452-5206
- 4. Date checklist prepared: [help] February 21, 2017
- 5. Agency requesting checklist: [help]
  Bellevue Development Services Department
- 6. Proposed timing or schedule (including phasing, if applicable): [help]
  Phase 1 (conceptual basis of design) was completed in September 2016. Current Phase 2 (design and permitting/regulatory coordination) scheduled January 2017 April 30, 2018. Expected construction July 1 August 31 2018 (in-water work window) with a duration of approximately 2-3 weeks.
- 7. Do you have any plans for future additions, expansion, or further activity related to or connected with this proposal? If yes, explain. <a href="mailto:lhelp">[help]</a>
  None at this time.
- 8. List any environmental information you know about that has been prepared, or will be prepared, directly related to this proposal. <a href="[help]">[help]</a>
  Conceptual Basis of Design (CH2M, 2016) that included as Attachment A: Upper Kelsey Creek Bankfull Width Memorandum by Osborn Consulting (2016).
- 9. Do you know whether applications are pending for governmental approvals of other proposals directly affecting the property covered by your proposal? If yes, explain. [help]

  None known.
- 10. List any government approvals or permits that will be needed for your proposal, if known. [help] U.S. Army Corps of Engineers Section 404
  WDFW Hydraulic Project Approval
  City of Bellevue Critical Areas Land Use Permit, Shoreline
  Exemption Permit, and Clearing & Grading
  Washington Department of Ecology Construction Stormwater General
  Permit and Section 401 Water Quality Certification

11. Give brief, complete description of your proposal, including the proposed uses and the size of the project and site. There are several questions later in this checklist that ask you to describe certain aspects of your proposal. You do not need to repeat those answers on this page. (Lead agencies may modify this form to include additional specific information on project description.) [help]

This project involves replacing a culvert (consisting of 5 undersized pipes) in Kelsey Creek with a pedestrian bridge to improve conveyance and reduce flooding frequency of adjacent roads and pedestrian trails. The total project area is approximately 4,800 square feet (0.11 acre) including a temporary trail detour. The proposed use of the site is identical to the existing use (passive recreation within the public park). The stream channel at the existing culvert will be restored, including native planting and streambank stabilization. The existing log upstream of the culvert will be repositioned as habitat wood within the Kelsey Creek stream channel. The log will be placed upstream of the proposed bridge such that it aids the 90-degree channel bend by deflecting flow from the south under the bridge and protects the northern toe of bank.

12. Location of the proposal. Give sufficient information for a person to understand the precise location of your proposed project, including a street address, if any, and section, township, and range, if known. If a proposal would occur over a range of area, provide the range or boundaries of the site(s). Provide a legal description, site plan, vicinity map, and topographic map, if reasonably available. While you should submit any plans required by the agency, you are not required to duplicate maps or detailed plans submitted with any permit applications related to this checklist. [help]

The project is located at the park trail crossing of Upper Kelsey Creek, on the eastern side of Lake Hills Greenbelt Park in Bellevue, WA. The assigned street address is 700 148<sup>th</sup> Avenue SE (tax parcel 3525059067) and immediately adjacent 15190 Lake Hills Blvd (Kelsey Creek, tax parcel 3525059038). Located in Section 35, Township 25N, Range 05E. Lattitude/longitude of the project site is: 47° 36′ 17.74′′N, 122° 08′ 14.85′′ W.

#### B. Environmental Elements [help]

#### 1. Earth [help]

- a. General description of the site: [help] (select one): ⊠Flat, □rolling, □hilly, □steep slopes, □mountainous, other:
- b. What is the steepest slope on the site (approximate percent slope)? [help]
  Overall site: <1% slope. Stream bank side slopes are steeper,
  25% or greater.
- c. What general types of soils are found on the site (for example, clay, sand, gravel, peat, muck)? If you know the classification of agricultural soils, specify them and note any agricultural land of long-term commercial significance and whether the proposal results in removing any of these soils. [help]

One soil boring at the site found 20 feet of peat underlain by 2-5 feet of lean clay with sand and gravel. Mapped soils at the project site are Seattle muck.

The project will not remove or modify any soils supporting the adjacent blueberry farm; to the extent possible, the contractor may reuse excavated native soil (peat) as approved by the project engineer.

## d. Are there surface indications or history of unstable soils in the immediate vicinity? If so, describe. [help]

None. The project is located in a low to moderate liquefaction zone, and is not located near any steep slopes or mapped landslide or seismic hazards.

e. Describe the purpose, type, total area, and approximate quantities and total affected area of any filling, excavation, and grading proposed. Indicate source of fill. [help]

The total proposed area of disturbance is 4,800 square feet.

The total proposed area of disturbance is 4,800 square feet (sf). Wood chips at 4-inches depth will be used for the temporary trail detour (approximately 23 cubic yards), and wood chips at 6-inches depth (approximately 5 cubic yards) will be used for shrub planting. After project completion, the temporary detour trail wood chips are proposed to be spread out onsite among the existing blueberry plants as mulch. In addition, approximately 20 cubic yards of 3/8" minus crushed rock at 12:1 ADA slope will be used to tie into existing trail surface. This is located within the limits of the existing trail, and will not encroach on the vegetated wetland area.

Approximately 58 square feet (<1 cubic yard) of the existing channel outside of the culvert will be graded for channel tie-in. Approximately 93 square feet of stream channel will be temporarily affected by a stream bypass during construction. The area of trail fill and culvert pipes to be removed is approximately 430 square feet. A net total of 15 cubic yards of existing trail fill and stream channel is estimated for excavation and removal, which accounts for just under 8 cubic yards of backfill estimated for the stream channel using excavated native material as approved by the engineer.

f. Could erosion occur as a result of clearing, construction, or use? If so, generally describe. [help]

Erosion control best management practices will be implemented during construction to prevent exposed soils from short-term erosion. Stream banks will be stabilized with coir matting and native plants. Native peat soils show little to no erosion under existing conditions, and no long-term erosion is expection from the completed project.

- g. About what percent of the site will be covered with impervious surfaces after project construction (for example, asphalt or buildings)? <a href="[help]">[help]</a>
  No new impervious surface area is proposed. The existing gravel trail covering the stream will be replaced with a wooden pedestrian bridge, which will reduce the amount of gravel trail surface.
- h. Proposed measures to reduce or control erosion, or other impacts to the earth, if any: [help]
  Temporary erosion and sedimentation control (TESC) measures to
  be used during construction in accordance with applicable City
  and state requirements will include minimization of
  disturbance, protection of existing vegetation with high
  visibility fencing, and bypass of inflowing water around the
  site during construction. If needed, contractor will implement
  other BMPs (e.g., temporary sediment traps).

#### 2. Air [help]

- a. What types of emissions to the air would result from the proposal during construction, operation, and maintenance when the project is completed? If any, generally describe and give approximate quantities if known. [help]

  Exhaust emissions from construction-related vehicles would be temporary and short-term. No emissions or impacts to air quality would result from the completed project.
- b. Are there any off-site sources of emissions or odor that may affect your proposal? If so, generally describe. [help]
   None
- c. Proposed measures to reduce or control emissions or other impacts to air, if any: [help]
  Construction equipment and vehicles would be kept in good
  working condition to control exhaust emissions during
  construction. No other emissions or air quality impacts are
  anticipated.

#### 3. Water [help]

- a. Surface Water:
  - 1) Is there any surface water body on or in the immediate vicinity of the site (including year-round and seasonal streams, saltwater, lakes, ponds, wetlands)? If yes, describe type and provide names. If appropriate, state what stream or river it flows into. [help]

    The project is in upper Kelsey Creek and associated wetland
    "Larsen A", and is 300 feet upstream of Larsen Lake. Kelsey
    Creek is a Type F fish-bearing stream. Wetland "Larsen A"
    is a freshwater forested/scrub-shrub/emergent, Category II

- wetland. The Kelsey Creek system eventually discharges into Lake Washington via the Mercer Slough.
- 2) Will the project require any work over, in, or adjacent to (within 200 feet) the described waters? If yes, please describe and attach available plans. [help]
  Yes; see attached plans. Project work will occur in Kelsey Creek and associated wetland area.
- 3) Estimate the amount of fill and dredge material that would be placed in or removed from surface water or wetlands and indicate the area of the site that would be affected. Indicate the source of fill material. [help]

Wood chips at 4-inches depth will be used for the 5-ft wide temporary trail detour (approximately 23 cubic yards), covering an area within the wetland of approximately 1,860 square feet, which includes approximately 500 square feet that is also within the 50-ft stream buffer. After project completion, the temporary detour trail wood chips are proposed to be spread out onsite among the existing blueberry plants as mulch.

In addition, wood chips at 6-inches depth (approximately 5 cubic yards) will be used for shrub planting over an area of 425 square feet.

Approximately 20 cubic yards (883 square feet) of 3/8" minus crushed rock at 12:1 ADA slope will be used to tie into existing trail surface. However, this is located within the limits of the existing trail and will not encroach on the vegetated wetland area, and is not considered a wetland impact.

An estimated total 15 cubic yards of existing fill and culvert pipes will be excavated to remove the culvert and grade the stream channel.

- 4) Will the proposal require surface water withdrawals or diversions? Give general description, purpose, and approximate quantities if known. [help]

  Temporary stream bypassing will be used during construction, assumed to accommodate flows from at least a 1.5-year recurrence interval summer storm event (4.2 cfs). Otherwise, no surface water withdrawals or diversions are proposed. See attached site plan.
- 5) Does the proposal lie within a 100-year floodplain? If so, note location on the site plan. [help]
  Yes. The project is located entirely within the 100-year floodplain as mapped by FEMA. Project work will not extend outside of this floodplain. See attached site plan.
- 6) Does the proposal involve any discharges of waste materials to surface waters? If so, describe the type of waste and anticipated volume of discharge. [help]

No discharges of waste materials to surface waters are proposed or anticipated as part of this project.

#### b. Ground Water:

- 1) Will groundwater be withdrawn from a well for drinking water or other purposes? If so, give a general description of the well, proposed uses and approximate quantities withdrawn from the well. Will water be discharged to groundwater? Give general description, purpose, and approximate quantities if known. [help]

  Groundwater will not be withdrawn from a well for drinking water or other purposes. Water will not be discharged to groundwater.

  Groundwater encountered during construction will be handled by the contractor, likely by pumping from within the excavation. Groundwater that is removed will be appropriately treated before discharge. If needed, the contractor may apply for a discharge permit from King County Industrial Waste Program and Bellevue Utilities.
- 2) Describe waste material that will be discharged into the ground from septic tanks or other sources, if any (for example: Domestic sewage; industrial, containing the following chemicals...; agricultural; etc.). Describe the general size of the system, the number of such systems, the number of houses to be served (if applicable), or the number of animals or humans the system(s) are expected to serve. [help]

  No waste material from septic tanks or other sources is proposed or anticipated to be discharged into the ground as part of this project.

#### c. Water runoff (including stormwater):

- 1) Describe the source of runoff (including storm water) and method of collection and disposal, if any (include quantities, if known). Where will this water flow?

  Will this water flow into other waters? If so, describe. [help]

  Water runoff from the site will discharge into Kelsey

  Creek. Water entering the upstream channel during

  construction will be bypassed to a downstream location (see Section 3.a.(4) above). If needed, temporary dams or other

  BMPs will be installed to form temporary sediment traps.

  Turbid water may be pumped to nearby sewer system (only with City approval) or transported offsite for disposal (see Section 3.b.(1) above).
- 2) Could waste materials enter ground or surface waters? If so, generally describe. [help]
  No waste materials are expected to enter ground or surface
  waters during project construction or after completion.
- 3) Does the proposal alter or otherwise affect drainage patterns in the vicinity of the site? If so, describe. [help]

  The project will not affect drainage patterns. The improved

conveyance of stream flow at the trail crossing provided by this project will reduce backwatering in the general vicinity under high runoff events, which is expected to reduce frequency of inundation of the trail and adjacent roadways. Under proposed conditions, surface water will continue to drain generally northwest toward Larsen Lake and lower Kelsey Creek.

d. Proposed measures to reduce or control surface, ground, and runoff water, and drainage pattern impacts, if any: [help] Not applicable.

#### 4. Plants [help]

a. Check the types of vegetation found on the site: [help]

□deciduous tree: alder, maple, aspen, other:
□evergreen tree: fir, cedar, pine, other:
□shrubs
□grass
□pasture
□crop or grain
□Orchards, vineyards or other permanent crops.
□wet soil plants: cattail, buttercup, bullrush, skunk cabbage, other: Reed canarygrass, buttercup
□water plants: water lily, eelgrass, milfoil, other:
□other týpes of vegetation:

- b. What kind and amount of vegetation will be removed or altered? [help]

  The grass growing on the existing stream banks will be replaced with native plants, as shown in the project planting plan. No trees (defined as woody plants >30 feet in height) or blueberry plants will be removed or altered as part of this project. Some yellow-twig dogwood shrubs on the northeast corner of the stream crossing will need to removed to accommodate the culvert removal.
- c. List threatened and endangered species known to be on or near the site. [help]
  No threatened or endangered plant species are known to be on
  or near the project site.
- d. Proposed landscaping, use of native plants, or other measures to preserve or enhance vegetation on the site, if any: <a href="Modes Include native">[help]</a>
  Approximately 570 square feet of planting is proposed, and will include native emergent and shrub species as shown in the planting plan.
- e. List all noxious weeds and invasive species known to be on or near the site. <a href="Moleon Plane">[help]</a>
  No Class A or regulated Class B noxious weeds are known to be

on or next to the site. Reed canarygrass is widespread and dominant throughout the project site and vicinity. Himalayan blackberry is common throughout the park, including along the trail just north of the project, but is not within the project's area of disturbance.

#### 5. Animals [help]

a. List any birds and other animals which have been observed on or near the site or are known to be on or near the site. [help]

#### Examples include:

birds: □hawk, □heron, □eagle, ⊠songbirds, other:
mammals: □deer, □bear, □elk, ⊠beaver, other: Beaver presence downstream
of Larsen Lake reported (not observed for this project).
fish: ⊠bass, ⊠salmon, ⊠trout, □herring, □shellfish, other: Chinook, Coho,
sockeye, chum, and cutthroat trout present. Other warm water
fish species such as bass may be present.

- b. List any threatened and endangered species known to be on or near the site. [help] Chinook salmon.
- c. Is the site part of a migration route? If so, explain. <a href="Melsey Creek provides salmon migration">[help]</a>
  Kelsey Creek provides salmon migration. Otherwise no migration route is known to be present.
- d. Proposed measures to preserve or enhance wildlife, if any: <a href="[help]">[help]</a>
  Enhanced fish passage and riparian functions in Kelsey Creek are secondary benefits of the culvert replacement and stream bank restoration.
- e. List any invasive animal species known to be on or near the site. [help]

  None known.

#### 6. Energy and Natural Resources [help]

- a. What kinds of energy (electric, natural gas, oil, wood stove, solar) will be used to meet the completed project's energy needs? Describe whether it will be used for heating, manufacturing, etc. [help]

  The completed project has no energy needs. Gasoline and diesel-powered construction equipment to include a small excavator and dump trunk.
- b. Would your project affect the potential use of solar energy by adjacent properties?
   If so, generally describe. [help]
- c. What kinds of energy conservation features are included in the plans of this proposal?

List other proposed measures to reduce or control energy impacts, if any: [help] None.

#### 7. Environmental Health [help]

Are there any environmental health hazards, including exposure to toxic chemicals, risk
of fire and explosion, spill, or hazardous waste, that could occur as a result of this proposal?
If so, describe. [help]

Environmental health hazards from the proposed are limited to exposure to gasoline-powered construction equipment and any powered hand tools used for bridge construction.

- 1) Describe any known or possible contamination at the site from present or past uses. [help]

  None known.
- 2) Describe existing hazardous chemicals/conditions that might affect project development and design. This includes underground hazardous liquid and gas transmission pipelines located within the project area and in the vicinity. [help]

  None known. A utilities locate will be conducted prior to construction, which will identify any gas transmission pipelines or other buried utilities at the project site.
- 3) Describe any toxic or hazardous chemicals that might be stored, used, or produced during the project's development or construction, or at any time during the operating life of the project. [help]

  None.
- 4) Describe special emergency services that might be required. [help]
  No special emergency services are considered necessary for
  the site during construction or the completed project.
  Local emergency services will respond as needed per normal
  protocols.
- 5) Proposed measures to reduce or control environmental health hazards, if any: <a href="Months: Intelligible">[help]</a>
  Standard safety precautions for construction work crews
  would be implemented as needed. In the unlikely event of a
  spill of petroleum products associated with construction
  equipment or other pollutants, control measures and cleanup
  would be the responsibility of the construction manager
  onsite.

#### b. Noise [help]

1) What types of noise exist in the area which may affect your project (for example: traffic, equipment, operation, other)? <a href="[help]">[help]</a>
The project is located more than 500 feet from the nearest busy roadway (Lake Hills Boulevard to the south). Noise from this road or the adjacent park and residential areas

is not expected to affect the project.

- 2) What types and levels of noise would be created by or associated with the project on a short-term or a long-term basis (for example: traffic, construction, operation, other)? Indi-cate what hours noise would come from the site. [help]

  Noise associated with the proposed project would be limited to contractor vehicles, small excavator, dump trunk, pumps, and tools such as mowers or hand-operated power equipment. Short-term construction noise would be limited to daytime working hours as required by the City of Bellevue. No long-term noise would result from the completed project.
- 3) Proposed measures to reduce or control noise impacts, if any: [help]

  Construction activities would be limited as required to

  daytime working hours.

  Noise regulated by BCC 9.18

#### 8. Land and Shoreline Use [help]

- a. What is the current use of the site and adjacent properties? Will the proposal affect current land uses on nearby or adjacent properties? If so, describe. [help]

  The site is a public park and open space. Nearby properties are residential neighborhoods.
- b. Has the project site been used as working farmlands or working forest lands? If so, describe. How much agricultural or forest land of long-term commercial significance will be converted to other uses as a result of the proposal, if any? If resource lands have not been designated, how many acres in farmland or forest land tax status will be converted to nonfarm or nonforest use? [help]

  The wetland area just west of the project is also used as a blueberry farm. This project will not convert or affect this use.
  - 1) Will the proposal affect or be affected by surrounding working farm or forest land normal business operations, such as oversize equipment access, the application of pesticides, tilling, and harvesting? If so, how: <a href="mailto:lhelp">[help]</a>
    No.
- c. Describe any structures on the site. [help]
- d. Will any structures be demolished? If so, what? [help]
  No, other than the five corrugated HDPE pipes at the existing culvert.
- e. What is the current zoning classification of the site? [help]

  The site is zoned as Single-Family Residential Office (R-1).

  R-1, Single Family Residential
- f. What is the current comprehensive plan designation of the site? [help]

  The site is designated as Parks/Single-Family Residential Low Density (P/SF-L) in the Comprehensive Plan.

- g. If applicable, what is the current shoreline master program designation of the site? [help]
  The project site is within the City's jurisdictional shoreline
  for Larsen Lake. However, no specific designation currently
  exists.
- h. Has any part of the site been classified as a critical area by the city or county? If so, specify. [help]

  The site contains fish-bearing stream, wetland, and floodplain, which are each classified as a critical area per Bellevue's Land Use Code.
- i. Approximately how many people would reside or work in the completed project? [help] None.
- j. Approximately how many people would the completed project displace? [help] None.
- k. Proposed measures to avoid or reduce displacement impacts, if any: <a href="mailto:[help]">[help]</a>
  Not applicable.
- I. Proposed measures to ensure the proposal is compatible with existing and projected land uses and plans, if any: [help]

  The proposed pedestrian bridge at the existing park trail and enhanced stream channel do not affect the current land use (park and open space). The bridge will not affect existing pedestrian access to the Lake Hills Greenbelt Park. The trail and stream crossing improvements proposed for this project are consistent with the City's long-term goal of making open spaces accessible to residents for passive recreation.
- m. Proposed measures to ensure the proposal is compatible with nearby agricultural and forest lands of long-term commercial significance, if any: <a href="mailto:lhelp">[help]</a>
  Not applicable.

#### 9. Housing [help]

- a. Approximately how many units would be provided, if any? Indicate whether high, middle, or low-income housing. [help]
   Not applicable.
- Approximately how many units, if any, would be eliminated? Indicate whether high, middle, or low-income housing. [help]
   Not applicable.
- c. Proposed measures to reduce or control housing impacts, if any: <a href="mailto:lhelp">[help]</a>
  Not applicable.
- 10. Aesthetics [help]

- a. What is the tallest height of any proposed structure(s), not including antennas; what is the principal exterior building material(s) proposed? [help]

  The proposed wooden pedestrian bridge railings will be 42 inches tall (above grade).
- b. What views in the immediate vicinity would be altered or obstructed? <a>[help]</a> <a href="None">None</a>.
- c. Proposed measures to reduce or control aesthetic impacts, if any: [help]
  No measures are considered necessary. The bridge would
  essentially match the size and type of bridges located at the
  park such as on the outlet channel at the north end of Larsen
  Lake.

#### 11. Light and Glare [help]

- a. What type of light or glare will the proposal produce? What time of day would it mainly occur? [help]

  Not applicable.
- b. Could light or glare from the finished project be a safety hazard or interfere with views? <a href="[help]">[help]</a>
  Not applicable.
- c. What existing off-site sources of light or glare may affect your proposal? <a href="mailto:lhelp">[help]</a>
  Not applicable.
- d. Proposed measures to reduce or control light and glare impacts, if any: <a href="mailto:[help]">[help]</a>
  Not applicable.

#### 12. Recreation [help]

- a. What designated and informal recreational opportunities are in the immediate vicinity? [help]
  The Lake Hills Greenbelt Park offers passive recreation in
  open space that is part of a 150-acre habitat corridor, and
  includes walking trails, picnic areas, blueberry farms, and
  seasonal produce stands.
- b. Would the proposed project displace any existing recreational uses? If so, describe. <a href="Molecular: Ihelp">[help]</a>
  No existing recreational uses would be displaced by the proposed project.
- c. Proposed measures to reduce or control impacts on recreation, including recreation opportunities to be provided by the project or applicant, if any: <a href="mailto:lhelp">[help]</a>
  None necessary.

#### 13. Historic and cultural preservation [help]

- a. Are there any buildings, structures, or sites, located on or near the site that are over 45 years old listed in or eligible for listing in national, state, or local preservation registers located on or near the site? If so, specifically describe. [help]

  No places or objects are known to exist in or next to the project site.
- b. Are there any landmarks, features, or other evidence of Indian or historic use or occupation? This may include human burials or old cemeteries. Are there any material evidence, artifacts, or areas of cultural importance on or near the site? Please list any professional studies conducted at the site to identify such resources. [help]

  None known or expected.
- c. Describe the methods used to assess the potential impacts to cultural and historic resources on or near the project site. Examples include consultation with tribes and the department of archeology and historic preservation, archaeological surveys, historic maps, GIS data, etc. <a href="Moleon Philosophics of Engineers determines that a cultural resources study is necessary during the Section 404 permitting process, a formal cultural resources assessment will be completed at that time by the City.">City.</a>
- d. Proposed measures to avoid, minimize, or compensate for loss, changes to, and disturbance to resources. Please include plans for the above and any permits that may be required. [help]

  Not applicable.

#### 14. Transportation [help]

- a. Identify public streets and highways serving the site or affected geographic area and describe proposed access to the existing street system. Show on site plans, if any. [help]

  The site is currently accessed via 148th Avenue SE, 15<sup>th</sup> Place SE, SE 4<sup>th</sup> Street, or Lake Hills Boulevard, which provide access to the trails that lead to the project site. Site access would not change as a result of this project.
- b. Is the site or affected geographic area currently served by public transit? If so, generally describe. If not, what is the approximate distance to the nearest transit stop? [help]

  The nearest King County Metro transit stop is located outside the park at the corner of 148th Avenue SE and SE 8th Street, at the southwestern corner of the park.
- c. How many additional parking spaces would the completed project or non-project proposal have? How many would the project or proposal eliminate? [help]

  Not applicable.
- d. Will the proposal require any new or improvements to existing roads, streets, pedestrian, bicycle or state transportation facilities, not including driveways? If so, generally describe (indicate whether public or private). [help]
  Not applicable.

- e. Will the project or proposal use (or occur in the immediate vicinity of) water, rail, or air transportation? If so, generally describe. [help] No.
- f. How many vehicular trips per day would be generated by the completed project or proposal? If known, indicate when peak volumes would occur and what percentage of the volume would be trucks (such as commercial and nonpassenger vehicles). What data or transportation models were used to make these estimates? [help]

  None.
- g. Will the proposal interfere with, affect or be affected by the movement of agricultural and forest products on roads or streets in the area? If so, generally describe. [help] No.
- h. Proposed measures to reduce or control transportation impacts, if any: [help]

  Not applicable.

#### 15. Public Services [help]

- a. Would the project result in an increased need for public services (for example: fire protection, police protection, public transit, health care, schools, other)? If so, generally describe. [help]
   No.
- b. Proposed measures to reduce or control direct impacts on public services, if any. <a href="mailto:[help]">[help]</a>
  Not applicable.

#### 16. Utilities [help]

- a. Circle utilities currently available at the site: <a href="[help]">[help]</a>
  electricity, natural gas, water, refuse service, telephone, sanitary sewer, septic system, other
  No utilities are currently available at the project site.
- c. Describe the utilities that are proposed for the project, the utility providing the service, and the general construction activities on the site or in the immediate vicinity which might be needed. [help]
  No utilities are proposed for the project.

#### C. Signature [help]

The above answers are true and complete to the best of my knowledge. I understand that the lead agency is relying on them to make its decision.

Name of signee: Erin Thatcher

Position and Agency/Organization: Engineer, CH2M HILL

Date Submitted: 2-21-2017

ch2m

# Project Narrative Description—Upper Kelsey Creek Stream Channel Improvement Project Received

PREPARED FOR:

City of Bellevue

COPY TO:

Project File

PREPARED BY:

Erin Thatcher/CH2M

Hans Ehlert/CH2M

DATE:

February 21, 2017

**Permit Processing** 

FEB 2 2 2017

This project narrative is prepared to satisfy the critical areas requirements under the City of Bellevue's Land Use Code (Ordinance No. 5680), for the proposed Upper Kelsey Creek Stream Channel Improvement (UKCSCI) Project, located in the Lake Hills Greenbelt Park in the City of Bellevue, King County, Washington.

## 1 A description of the project site, including landscape features, existing development, and site history as applicable.

This stream channel improvement project will involve replacing a culvert with a pedestrian bridge in Bellevue's Lake Hills Greenbelt Park. The project is located on upper Kelsey Creek immediately east and upstream of Larsen Lake (between Larsen Lake and 154th Avenue SE). The primary objective of the project is to improve conveyance and reduce the frequency of flooding of nearby residential and agricultural land. To accomplish this objective, the proposed project involves removing five existing 36-foot-long by 18-inch-diameter pipes and associated fill, re-establishing a stream channel through this reach, and installing a wooden pedestrian bridge. Added benefits from the project for fish passage and stream habitat are also expected. The project limits of disturbance include approximately 4,800 square feet of park trail, stream channel, and associated wetland and buffer areas. The new bridge will be 10 feet wide by 14 feet long. The newly excavated streambanks will be stabilized and vegetated using emergent wetland plants established in a coir coconut fiber mat; shrubs will also be planted. The existing log upstream of the culvert has a 24-inch diameter and is 15 feet long, and will be repositioned upstream of the proposed bridge such that it aids the 90-degree channel bend by deflecting flow from the south under the bridge and protects the northern toe of bank.

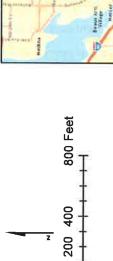
The project will involve minor temporary impacts to the stream and adjacent wetland during construction, but will result in a net environmental benefit from re-establishing 36 linear feet of channel that was previously piped. The project should also reduce maintenance requirements for the City of Bellevue (City) at the existing culvert location. The City is funding these improvements in part with a grant from the King County Flood Control District. This project is an allowed use within a critical area per Bellevue Code 20.25H.055.B.

See Figure 1 for a map of the Bellevue critical areas within the project vicinity.

#### Streams and Wetlands

The project is located in the Kelsey Creek Basin within the larger Lake Washington Watershed. Upper Kelsey Creek within the project area is classified as a Fish Bearing "F" Type stream on a developed site, and requires a minimum buffer width of 50 feet according to the City of Bellevue 20.25H.035. The project as well as Larsen Lake and its associated wetlands are also located within the 100-year floodplain mapped by FEMA. The culvert to be removed is located on Upper Kelsey Creek, which drains into Larsen





0



FIGURE 1

Wetland (Shoreline Master Program)

∑ Floodplain (100-year)

PARCELS

Wetland Buffer (110-ft)

Section-Township-Range

COALZONE | Slope >40%

LAKES -Trails

-Streams

Data sources: Streams, Trails, Lakes, CoalZone, Slope, Section-Township-Range, Parcels, Floodplain, Wetland (City of Bellevue GIS); Wetland buffer (CH2M GIS); Aerial photo (ESRI)

Critical Areas Map Project Narrative UKCSCI Project URESIREPORTFIGURE\_1\_85X11\_LANDSCAPE\_MXD ETHATCHE 27/C 12M



Lake. The section of Upper Kelsey Creek is immediately upstream and east of Larsen Lake. The existing culvert conveys Kelsey Creek stream flow to Larsen Lake, which is about 300 feet downstream of the project site. A bankfull width memorandum was prepared by Osborn Consulting (2016) for this project, and was included as Attachment A in the Conceptual Basis of Design (CH2M, 2016).

The project area is located in a broad, flat wetland floodplain that is associated with Larsen Lake, portions of which are managed as a blueberry farm and as wetland natural area. The wetland is mapped by the City's 2009 Shoreline Master Program Update as an 88-acre, Category II wetland including Larsen Lake, composed of riverine and depressional hydrogeomorphic classes and several habitat types. West of the existing trail, wetland functions are considered impaired by the blueberry farm. The Lake Hills Greenbelt Park is part of a wildlife habitat corridor made up of more than 150 acres of forests, wetlands, streams, and lakes. The park also includes several trails, public picnic areas, and seasonal produce stands. Single-family residences are located just east of the project, along 154th Avenue SE. Additional wetlands and designated shoreline associated with Phantom Lake are located to the south and upstream of the proposed project. According to the City of Bellevue Shoreline Analysis Report (2009), the proposed UKCSCI Project is located within the designated shoreline of Larsen Lake.

Table 1. Wetlands at the UKCSCI Project Location

Wetland Name/ID	Source	Area (acres)	Classification (City of Bellevue/Ecology)	Standard Buffer Width (City of Bellevue)	
Larsen A	City of Bellevue Shoreline Master Program (2009)	88	Category II	110 feet (habitat score = 26)	

#### Geologic Hazard Areas

According to the 2009 Shoreline Master Program Update and current City GIS database, the project site is not located within or adjacent to a mapped landslide hazard area, moderate to high hazard liquefaction zone, or seismic hazard area. Also according to the Shoreline Master Program Update (City of Bellevue, 2009), the project site is not located within or adjacent to a mapped steep slope, defined as over 40% gradient, or a mapped coal mine hazard.

#### Habitat Associated with Species of Local Importance

Species of Local Importance are designated in Bellevue's CAO, Chapter 20.25H.150. Of these species, fall Chinook (*Oncorhynchus tshawytscha*) and coho (*O. kisutch*) have documented presence (migration) in Kelsey Creek at the project site, according to the Washington Department of Fish and Wildlife (WDFW) Priority Habitats and Species Report (WDFW, 2017). However, suitable habitat for these and other salmonids is observed to be limited at the project site location due to silty stream substrate and low seasonal water depths. Other fish, including sockeye (*O. nerka*) and coastal cutthroat trout (*O. clarki*) are also expected to occur in the Kelsey Creek system. WDFW maps occurrence of resident coastal cutthroat trout in Kelsey Creek at the project site (WDFW, 2012).

No salmonid rearing or spawning habitat is present in Kelsey Creek at the project site; rearing and spawning habitat is identified in other reaches of Kelsey Creek. According to Otak (2012), "Kelsey Creek provides spawning habitat for coho and sockeye salmon and there is documented presence of Chinook in the system (WDFW, 2012). The City of Bellevue indicates that Chinook, coho, sockeye, cutthroat trout, and peamouth (Mylocheilus caurinus) are all known to spawn in the Kelsey Creek basin (City of Bellevue 2010a; 2010b), with Chinook occurring in the system upstream to Main Street and coho occurring up to Lake Boulevard, to the south and upstream of Larsen Lake... Within the project study area, however, the Kelsey Creek system displays very shallow or no surface water during portions of the year, very silty substrate, and generally appears to provide little or no suitable habitat for salmonids. Portions of the

upper system in the project study area may support warm water species where water depths are sufficient, and three-spined stickleback (Gasterosteus aculeatus) were noted in the project reach downstream of SE 16th Street and upstream and downstream of Lake Hills Boulevard during our site reconnaissance."

Freshwater wetlands are mapped by WDFW at the project site associated with Larsen Lake, and are consistent with those mapped by the City under the Shoreline Master Program (2009), as described above. No other priority habitats or species are mapped by WDFW at the project site or within 0.25-mile of the project site. Other species of local importance, including birds, mammals and amphibians, may occur at the project site but have not been observed or documented.

A description of how the design constitutes the minimum necessary impact to the critical area.

The project will not result in any permanent critical area impacts, other than the use of wood chips in the wetland area for a temporary trail detour and shrub planting on the stream bank. Vegetation removal will be limited to the minimum necessary to remove the culvert, and temporarily cleared areas will be replanted with native wetland plants. The project will temporarily disturb an area of approximately 4,800 square feet (0.11 acre) in size, during construction activities that will remove the existing culvert, install the pedestrian bridge, and restore the stream channel. The proposed project is expected to provide overall benefits to special status species, particularly fish, by enhancing the Kelsey Creek stream channel and riparian area at this location. The proposed bridged stream crossing at the trail will improve fish passage, the existing log upstream of the stream crossing will be repositioned as habitat wood, and restoration planting will consist of native sedges, bulrush, and shrubs.

Construction activity within the wetland will be minimized and will make use of temporary mats as necessary for construction equipment movement on soft soils.

Construction staging will avoid removal of and damage to trees and minimize removal of shrubs using high visibility fencing and restriction of staging areas to the existing trail to the extent possible, which is outside of the wetland. Any areas of temporary disturbance from construction staging and activity will be restored to pre-project conditions per the planting plan, using a native seed mix and maintained by City utilities maintenance staff to ensure stabilization.

The project is not expected to impact any geologic hazard areas or flood hazard areas.

Habitat and fish enhancement improvements in the project are assumed to self-mitigate the temporary, incidental impacts. Temporary, incidental impacts to the stream and wetland area will be minimized through the use of construction best management practices (BMPs) and the planting plan. Construction BMPs and measures will include required erosion and sedimentation control practices under the Construction Stormwater General Permit, protection of existing vegetation to the extent possible with high-visibility construction fencing, bypassing inflowing water around the site during construction, and fish exclusion from the work area performed by a qualified biologist.

Larsen Lake will continue to provide considerable detention and filtering downstream of the project limits. Several other factors should also minimize the potential for water quality effects:

- 1. BMPs will be used to avoid or minimize sedimentation during and after construction.
- 2. The downstream channel will still have reed canarygrass growing on the banks and reaching into the channel, which will continue to provide filtering and settling.
- 3. Larsen Lake will promote settling for flow entering the lake.
- 4. Planting shrubs along the channel banks should help water temperatures by increasing shade.

A description of why there is no feasible alternative with less impact to the critical area, critical area buffer, or critical area structure setback.

There is no technically feasible alternative to the proposed project that can achieve the project objectives (improve conveyance and reduce the frequency of flooding) in this area without temporary impact to critical areas and buffers. The wetlands and flat topography extend upstream of the project location to Phantom Lake and downstream to Larsen Lake. The cause of flooding was traced to the undersized culverts at the proposed project location. No improvements outside of the stream channel and floodplain would be able to improve stream flow conveyance and reduce flooding.

4 A description of alternatives considered and why the alternative selected is preferred.

No other alternatives were considered because the project is necessary to improve conveyance and reduce flooding at this location, no other location or solution can achieve that objective, and no permanent impacts to critical areas will result from the project.

5 A summary of how the proposal meets each of the decision criteria contained in Land Use Code Section 20.30P.

A. The proposal obtains all other permits required by the Land Use Code.

Response: The project is applying concurrently for a Shoreline Exemption permit and Clearing and Grading permit from the City of Bellevue. No other City land use permits are required for this project.

B. The proposal utilizes to the maximum extent possible the best available construction, design and development techniques which result in the least impact on the critical area and critical area buffer.

Response: No permanent impacts to wetland vegetation or wetland function will occur; an overall net gain in stream and wetland habitat is expected to result from the improved conveyance at the bridge and streambank restoration planting, including re-positioning of a large existing log for habitat structure.

Construction staging and activity will be restricted to existing upland trails to the extent possible, and any unavoidable temporary disturbance of wetland vegetation will be restored to preproject conditions. The contractor will use mats or timbers to protect soft soils from impacts from moving construction equipment. Construction will take place during the dry season, and temporary erosion and sedimentation control measures will be implemented by the contractor.

To develop the restoration planting plan, the City has consulted with the Parks Department (responsible for long-term maintenance) and permitting agencies, including the Washington Department of Fish and Wildlife, to determine the best plant species in terms of likelihood of successful establishment and riparian function in the stream at this wetland location.

C. The proposal incorporates the performance standards of Part 20.25H LUC to the maximum extent applicable.

Response: The project incorporates the performance standards of 20.25H to the maximum extent applicable, as described below in the following section (Section 6).

D. The proposal will be served by adequate public facilities including streets, fire protection, and utilities.

Response: The proposed project does not require any new or expanded public facilities. The project site will be adequately served by existing trail access and City stormwater maintenance.

E. The proposal includes a mitigation or restoration plan consistent with the requirements of LUC 20.25H.210; except that a proposal to modify or remove vegetation pursuant to an approved Vegetation Management Plan under LUC 20.25H.055.C.3.i shall not require a mitigation or restoration plan.

Response: The project includes a streambank planting plan that includes native planting consistent with the requirements of LUC 20.25H. Streambank planting will be monitored and maintained by City staff for a minimum of three years.

#### F. The proposal complies with other applicable requirements of this code.

Response: The proposed project complies with all other applicable City of Bellevue Land Use Code requirements.

A summary of how the proposal meets each of the criteria and performance standards contained in Land Use Code Section 20.25H associated with the critical area you are modifying.

#### 20.25H.055.C.1, Construction Staging

Response: The proposed project work is consistent with all applicable City codes and standards. No tree removal is proposed, and construction plans include protection of existing trees with high visibility construction fencing. Areas of temporary disturbance will be re-seeded and restored to pre-project conditions by the contractor.

#### 20.25H.055.C.2, New and Expanded Uses or Development

#### Response:

- i. No technically feasible alternative for the proposed project exists with less impact on critical areas or critical area buffers, as discussed above.
- ii. The location and design of the project minimize the temporary impacts from construction on the critical areas (wetland, stream, stream buffer, and floodplain). Disturbance to vegetation will be minimized with the use of upland areas for construction staging to the extent possible, and high visibility construction fencing to protect trees, shrubs and blueberry plants. Disturbance to wetland soils will be minimized by construction during the dry season, and by use of temporary mats and logs as necessary for construction equipment movement on soft soils.
- iii. No salmonid rearing or spawning habitat is located within the project's disturbance area.
- iv. The bridge crossing has been designed to minimize the trail's encroachment on the stream. The completed bridge will be 10 feet wide and will have gravel ramps that tie into the existing, wider trail at existing grade. It will mimic the style and size of other existing pedestrian bridges within the park.
- v. All proposed work is consistent with all applicable City of Bellevue codes and standards.
- vi. The completed project will not affect flow peaks or durations or reduce flood storage capacity, and is not expected to adversely affect the hydroperiod of the adjacent wetlands.
- vii. No parking or additional support functions are included in this proposed project.
- viii. The project will not result in any areas of permanent disturbance other than wood chips left onsite after construction. Wood chips used for the temporary trail detour and shrub planting will benefit the shrubs and blueberry plants in the wetland (e.g., by reducing competition from grasses and weeds).

#### 20.25H.055.C.3.e, New or Expanded Bridges and Culverts

Response: The new pedestrian bridge has been designed to provide a channel opening in accordance with WDFW's 2013 Water Crossing Design Guidelines, Chapter 4: bridge design guidelines for habitat

protection. Due to the lack of large wood and trees in the system, the shallow gradient and accompanying low energy of the system, it is anticipated that this bridge will not need to pass large pieces of debris. Therefore, by engineering judgment, a clearance of 0.5 feet above the 100-yr water surface elevation based on the FEMA base flood elevation (BFE), is deemed sufficient to pass the debris in this system. In addition, due to the relatively flat large floodplain, when the creek is at the 100-yr elevation, it will flow over the gravel trail and spread out around Larsen Lake.

This will require smaller approach ramps than if a design criteria of +1 foot above the BFE is used. If the clearance was +1 foot above BFE, the ramps would be approximately 30 feet long and up to 2.6 feet high. With this there is a high risk that the weight of the ramps may cause them to sink into the peat. A lower clearance makes shorter, lighter ramps feasible.

This is consistent with WAC - 220-660-190(4)(f) - Bridge Design - "The design must have at least three feet of clearance between the bottom of the bridge structure and the water surface at the 100-year peak flow unless engineering justification shows a lower clearance will allow the free passage of anticipated debris."

#### 20.25H.080, 20.25H.100

#### Response:

- 1. The project does not propose any permanent lighting, and construction lighting is not anticipated as it will be restricted to daytime working hours in summer.
- 2. The project will not generate any new permanent source of noise, and construction noise will be temporary, short-term and limited to daytime working hours.
- 3. The project does not result in any toxic runoff from impervious surface areas.
- 4. The project does not result in the generation of water needing treatment.
- 5. The stream banks and buffer will be restored with native plantings per the planting plan.
- 6. Any use of pesticides, insecticides and fertilizers for maintenance of the restoration plantings will be completed in accordance with the City of Bellevue's current Environmental Best Management Practices.

#### 20.25E.080, Shoreline Performance Standards

#### 20.25E.080.B, General Regulations Applicable to All Land Use Districts and Activities.

Response: The proposed project is in compliance with all listed shoreline performance standards.

#### 20.25E.080.G, Clearing and Grading Regulations

Response: The project has applied for a City of Bellevue Clearing and Grading permit, and will comply with all applicable requirements for clearing and grading within the shoreline critical area per the City's LUC 20.25E and 20.25H.

#### 20.25E.080.R, Road and Railroad Designs and Construction Regulations

Response: The project does not include development of a new pathway and does not relocate the existing pathway (trail). No new roads, railroads, bicycle trails, or parking facilities are included in the proposal. A temporary trail detour will be used only during construction.

#### 20.25H.180 Development in the Area of Special Flood Hazard

Response: The project site lies entirely within the FEMA-mapped 100-year floodplain. Therefore, proposed activities are within a designated area of special flood hazard. However, the proposed project does not include any new structures or grading that will create a rise in the base flood elevation, and the bridge structure will be designed to provide at least 6 inches of freeboard above the anticipated FEMA-mapped 100-year water elevation (258.6 ft). This 100-year base flood elevation is close to the elevation

of the existing trail near the existing culverts. In addition, the floodplain is broad and flat such that floodwater would spread out and flow over the trail at the existing culverts, which negates concern about blockage at the bridge.

A Special Project Information Form (SPIF) has been prepared for USACE to satisfy the federal Endangered Species Act requirements.

A summary of how the proposal meets each of the criteria contained in Land Use Code Section 20.25H.230 as required for applications proposing a modification through the use the Critical Areas Report process.

Not applicable; this project does not propose a modification through the use of the Critical Areas Report process.

#### **Photos**



Photo 1. Outlet of existing five 18-inch diameter culverts that are proposed for replacement with a pedestrian bridge. The habitat log to be repositioned in the stream channel is visible on the far side of the gravel trail (5-27-2016).

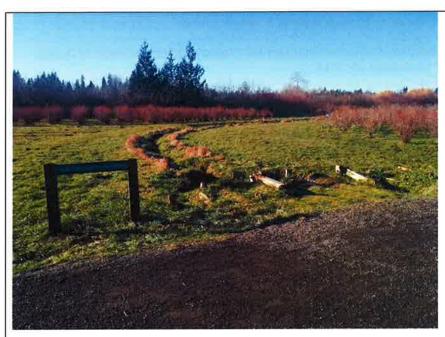


Photo 2. Wetland areas including the active blueberry farm adjacent to the trail at the project location; looking downstream toward Larsen Lake (1-12-2017).



Photo 3. The approximately 3-foot deep by 2-foot wide rectangular channel observed in the reference reach located immediately downstream (west) of the existing culverts (5-27-2016).

#### References

CH2M. 2016. *Upper Kelsey Creek Stream Channel Improvement Project – Conceptual Basis of Design.* Prepared for City of Bellevue. September 20, 2016.

City of Bellevue. 2009. Shoreline Master Program, Draft Shoreline Analysis Report. http://www.bellevuewa.gov/shoreline\_management\_documents.htm

City of Bellevue. 2010a. Fish Use of Bellevue Streams. http://www.bellevuewa.gov/pdf/Utilities/FishUse\_BellevueStreams.pdf

City of Bellevue. 2010b. Kelsey Creek Basin. <a href="http://www.bellevuewa.gov/pdf/Utilities/8-KELSEY\_CREEK.pdf">http://www.bellevuewa.gov/pdf/Utilities/8-KELSEY\_CREEK.pdf</a>

Otak. 2012. Upper Kelsey Creek Investigation Findings and Recommendations Technical Memorandum, Draft. Prepared for the City of Bellevue. December 6.

Washington Department of Fish and Wildlife (WDFW). 2012. SalmonScape. <a href="http://wdfw.wa.gov/mapping/salmonscape/index.html">http://wdfw.wa.gov/mapping/salmonscape/index.html</a>

Washington Department of Fish and Wildlife (WDFW). 2017. Priority Habitats and Species Report (PHSPlusPublic). Accessed January 4, 2017. Available at: <a href="http://wdfw.wa.gov/conservation/phs/">http://wdfw.wa.gov/conservation/phs/</a>.

# CITY OF BELLEVUE

UPPER KELSEY CREEK STREAM CHANNEL IMPROVEMENT PROJECT BELLEVUE, WASHINGTON 98005 C.I.P. D-94

**MAYOR** 

**JOHN STOKES** 

DEPUTY MAYOR

JOHN CHELMINIAK

CITY MANAGER BRAD MIYAKE CITY COUNCIL
CONRAD LEE
JENNIFER ROBERTSON
LYNNE ROBINSON
VACANT
KEVIN WALLACE

DIRECTOR OF UTILITIES

NAV OTAL

#### **INDEX TO DRAWINGS**

DWG

1 TITLE SHEET, PROJECT LOCATION AND INDEX TO DRAWINGS

2 LEGEND, ABBREVIATIONS, AND GENERAL NOTES

3 SITE PLAN, TESC, TEMPORARY STREAM BYPASS, TEMPORARY

ACCESS AND TRAIL DETOUR

STREAM GRADING PLAN AND PROFILE, DETAILS, SECTIONS, NOTES, AND SURVEY CONTROL; TRAIL PLAN AND PROFILE, DETAILS, CROSS SECTION, NOTES

C-5 PLANTING PLAN, PLAN MATERIALS LIST, AND PLANTING DETAILS

#### **CALCULATIONS**

PROJECT AREA IMPACTS TEMPORARY TRAIL WETLAND IMPACTS: TEMPORARY WETLAND AND STREAM 2.439 SF BUFFER IMPACTS: TEMPORARY STREAM BYPASS IMPACTS: TEMPORARY STREAM GRADING IMPACTS: 93 SF 58 SF PERMANENT STREAM IMPACTS: 0 SF PERMANENT WETLAND IMPACTS: 0 SF MATERIAL EXPORT/IMPORT
ESTIMATED TRAIL FILL (WOOD CHIPS):
ESTIMATED PLANTING AREA 23 CY FILL (WOOD CHIPS): 5 CY ESTIMATED CHANNEL CUT: ESTIMATED ROCK CHIP FILL: 15 CY 20 CY



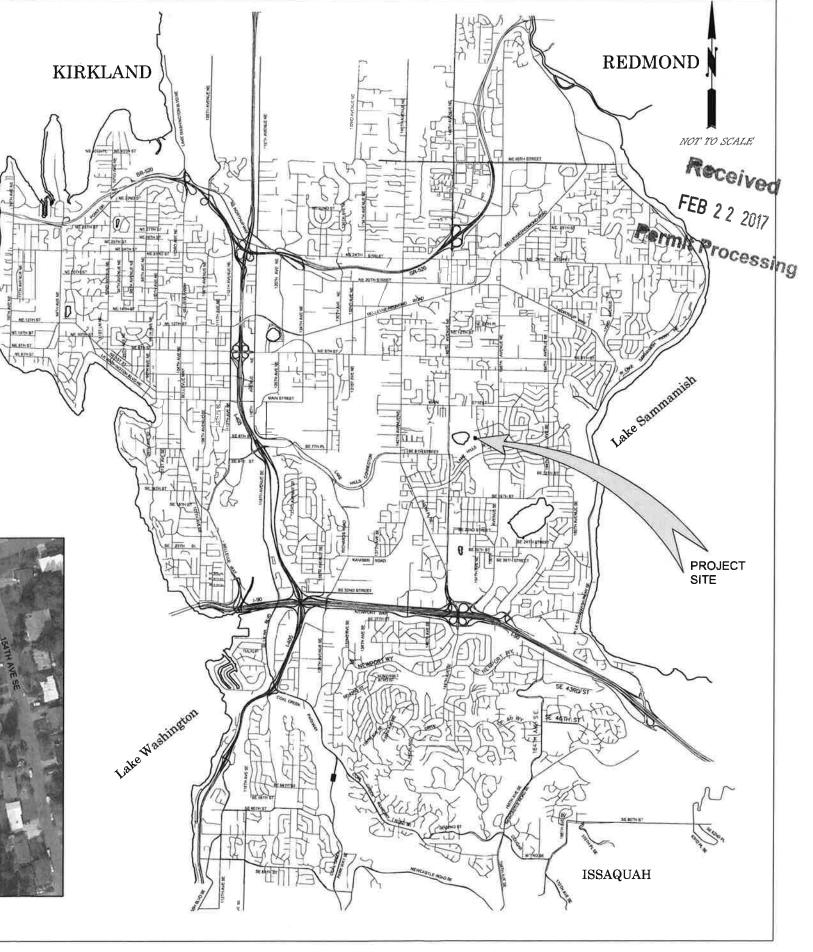
VICINITY MAP

#### PERMIT LEVEL DESIGN

Approved By

DESIGN MANAGER DATE

BID NO. XXXXX



DESCRIPTION

CHANNEL CENTERLINE COIR 100 YEAR WSE WETLAND BOUNDARY CHANNEL GRADE BREAK WATTLE AND COMPOST SOCKS DRAIN PIPE SILT FENCE HIGH VISIBILITY FENCE LIMIT OF CLEARING AND GRADING

LINETYPE

DESCRIPTION

WETLAND

EMERGENT PLANTING LOW SHRUB PLANTING SHRUB PLANTING

STAGING AREA SEEDING

TEMPORARY CLEARING OR DISTURBANCE AREA

SYMBOLS

DESCRIPTION



NORTH ARROW



LOCATION POINT



SECTION



IDENTIFIES SECTION VIEW

TAKEN OR SHOWN ON STRUCTURES SHEET S-01



TAKEN OR SHOWN ON THE SAME SHEET

VERTICAL DATUM:

HE VERTICAL DATUM FOR THIS SURVEY IS NAVO 88, BASED ON THE WASHINGTON STATE REFERENCE ETWORK (WSRN) AND TIES TO CITY OF BELLEVUE BENCHMARK 683

683 ELEVATION: 296 197 US FEET

HORIZONTAL DATUM:

- [			SURVEY CO	ONTROL			
ĺ	Point#	Description	Elevation	Northing	Easling		
-	100 HUB&TACK	257,980	223389.0760	1318706-7000			
3	101	HUB&TACK	257,921	223576,7440	1318694.6040		
1	102	HUB&TACK	258,784	223210.5750	1318709 2460		

GENERAL NOTES

- 1. ALL CONSTRUCTION MUST BE IN ACCORDANCE WITH THE CITY OF BELLEVUE'S DEVELOPMENT STANDARDS; THE CITY OF BELLEVUE'S ENGINEERING AND UTILITY STANDARDS; THE BELLEVUE CITY CODE; THE UNIFORM BUILDING CODES; PERMIT CONDITIONS; AND ALL OTHER APPLICABLE CODES, ORDINANCES, STANDARDS AND POLICIES, APPLICABLE INSTALLATION DETAILS ARE INCORPORATED BY REFERENCE TO BELLEVUE'S ENGINEERING AND UTILITIES PUBLISHED STANDARDS, ALL APPLICABLE EROSION CONTROL MEASURES MUST BE TAKEN.
- 2. CONTRACTOR SHALL HAVE PROVEN EXPERIENCE IN SIMILAR PROJECTS AND BE THOROUGHLY FAMILIAR WITH CITY OF BELLEVUE APPLICABLE STANDARDS AND CODES PRIOR TO COMMENCEMENT OF WORK
- 3. A COPY OF THE APPROVED PLANS MUST BE ONSITE WHENEVER CONSTRUCTION IS IN PROGRESS.
- 4. THE CONTRACTOR IS RESPONSIBLE FOR OBTAINING ANY OTHER REQUIRED PERMITS PRIOR TO BEGINNING CONSTRUCTION.
- 5. CALL UNDERGROUND UTILITY LOCATE SERVICE AT TELEPHONE NUMBER 1-800-424-5555 A MINIMUM OF TWO WORKING DAYS PRIOR TO ANY EXCAVATION. NO EXISTING UTILITIES HAVE BEEN RESEARCHED OR VERIFIED IN ANY AREAS WITHIN THE PROJECT LIMITS. IT IS THE SOLE RESPONSIBILITY OF THE CONTRACTOR TO DISCOVER AND AVOID ANY UTILITIES WHICH MAY BE AFFECTED BY THE IMPLEMENTATION OF THIS PLAN.
- 6. AREAS AT THE LARSEN LAKE SITE EXCEPT FOR THE TRAIL ITSELF ARE SENSITIVE WETLAND AREAS, WHICH ARE RESTRICTED, CONTRACTOR SHALL ONLY ENTER WETLANDS DESIGNED ON THE PLAN FOR ENTRY. CONTRACTOR SHALL USE REMOVABLE MATS TO PROTECT ALL WETLAND AREAS USED BY ANY EQUIPMENT AND STORAGE OF ANY MATERIALS, AND SHALL RESTORE AND RESEED ALL SUCH AREAS THAT ARE DISTURBED.
- 7. SITE SHALL BE RESTORED TO BETTER OR EQUAL CONDITION IN ANY AREAS AFFECTED BY THIS WORK. THE CONTRACTOR WILL BE REQUIRED TO REMOVE AND RESTORE ANY EXISTING FEATURES THAT ARE DISTURBED DURING ACCESS AND CONSTRUCTION. THIS INCLUDES DAMAGE TO THE TRAIL SURFACE AND STRUCTURES, WETLAND, CHANNEL AND STREAM BANK, AND VEGETATION THAT MAY BE DISTURBED DURING CONSTRUCTION OF THE UKCSCI PROJECT. ALL EXISTING SURFACE IMPROVEMENTS WILL BE RESTORED IN KIND.
- 8. SCHEDULING: ALL WORK SHALL BE COORDINATED WITH CITY OF BELLEVUE AND PARKS TO ACHIEVE MINIMAL DISTURBANCE TO ROADWAY AND TRAIL OPERATION
- 9 ALL IN-WATER WORK SHALL OCCUR WITHIN THE IN-WATER WORK WINDOW BETWEEN JULY 1 AND AUGUST 31, 2018. 10. THIS LAYOUT IS DIAGRAMMATIC. CONTRACTOR SHALL COORDINATE EXACT LOCATION OF POINTS OF CONNECTION TO EXISTING SYSTEMS WITH THE CITY PRIOR TO BEGINNING ANY WORK.
- 11. PRIOR TO COMMENCING WORK, THE CONTRACTOR, THE CITY'S INSPECTORS AND REPRESENTATIVES SHALL MEET ONSITE TO REVIEW EXISTING SITE CONDITIONS. LOGISTICAL ITEMS WILL BE DETERMINED AT THE PRE-CONSTRUCTION MEETING AND SUBSEQUENT CONSTRUCTION MEETINGS, INCLUDING THE SPECIFIC LOCATIONS AND METHODS TO BE USED FOR STAGING, TRAIL CLOSURE LOCATIONS AND TIMING, TRAIL DETOUR LOCATION AND CONDITION (SIGNAGE, TEMPORARY BRIDGE, AND SURFACE), TEMPORARY FENCING MATERIALS, AND COORDINATION OF EXCAVATION, BRIDGE, AND TRAIL WORK. THE CONTRACTOR SHALL COORDINATE WITH THE CITY'S REPRESENTATIVE ON ALL CONSTRUCTION LOGISTICAL ITEMS NOT EXPLICITLY DESCRIBED IN THE DRAWINGS AND SPECIFICATIONS
- 12. BRIDGE CONSTRUCTION AND INSTALLATION BY WESTERN WOOD STRUCTURES (PREFERRED).

TEMPORARY PEDESTRIAN AND TRAFFIC CONTROL NOTES:

- 1. CONSTRUCTION ACCESS TO SITE WILL BE FROM CUI-DE-SAC AT SE 4TH STREET, NORTH OF THE PROJECT SITE. CONTRACTOR SHALL USE EXISTING TRAIL TO ACCESS PROJECT SITE FROM CITY RIGHT OF WAY.
  2. CONTRACTOR WILL COORDINATE WITH BELLEVUE PARKS TO MAKE ARRANGEMENTS TO ALLOW THE CONTRACTOR TO REMOVE AND REPLACE THE BOLLARDS AT SE 4TH STREET AS NECESSARY FOR ACCESS.
- 3. CONTRACTOR WILL COORDINATE WITH CITY FOR DETAIL OF TEMPORARY TRAFFIC CONTROL REQUIREMENTS FOR USING CITY RIGHT OF WAY FOR SITE ACCESS, DELIVERY, AND OFF-LOADING OF EQUIPMENT AND
- 4. CONTRACTOR SHALL PROVIDE A TEMPORARY DETOUR PATH FOR PEDESTRIANS, MARKED WITH SIGNS BETWEEN BLUEBERRY ROWS, WITH A SAFE TEMPORARY REMOVABLE PEDESTRIAN CROSSING OVER THE CHANNEL IMMEDIATELY DOWNSTREAM (WEST) OF THE PROJECT.
- 5, TEMPORARY TRAIL SURFACE DEPTH SHALL BE 4" OF MEDIUM BARK CHIPS, EXISTING GRASS AND SHRUBS TO BE MOWED PRIOR TO PLACEMENT OF CHIPS. CHIPS WILL BE LEFT IN PLACE UPON TEMPORARY CROSSING REMOVAL, PLACEMENT OF CHIPS TO BE COORDINATED WITH CITY AND OWNER.
- 6. CONTRACTOR SHALL AVOID, PRESERVE AND PROTECT EXISTING SENSITIVE AREAS, INCLUDING WETLANDS AND OTHER LOCATIONS SHOWN ON THE DRAWINGS AS "NOT TO BE DISTURBED" OR AS SUBSEQUENTLY MARKED IN THE FIELD, EXCEPT WHERE SUCH PROTECTION CONFLICTS WITH WORK, AS APPROVED BY THE CITY.
- 7. CONSTRUCTION ACCESS AND OPERATIONS SHALL REMAIN ON THE TRAIL AS MUCH AS POSSIBLE, CONTRACTOR SHALL USE REMOVABLE TIMBER MATS TO PROTECT AND DISTRIBUTE WEIGHT TO ALLOW ACCESS ON THE SOFT SOILS IN SENSITIVE AREAS ADJACENT TO THE TRAIL, SEE GENERAL NOTE 6.

TEMPORARY EROSION & SEDIMENTATION CONTROL NOTES

- 1. THE CONSTRUCTED EROSION CONTROL AND SEDIMENTATION PLAN SHALL BE APPROVED BY THE CITY OF BELLEVUE PRIOR TO PERFORMING ANY SITE GRADING OR CLEARING.
- 2. THE IMPLEMENTATION OF TEMPORARY EROSION AND SEDIMENTATION CONTROL (TESC) MEASURES AND THE CONSTRUCTION, MAINTENANCE, AND REPLACEMENT OF THESE FACILITIES IS THE RESPONSIBILITY OF THE CONTRACTOR
- 3, THE TESC FACILITIES MUST BE CONSTRUCTED IN CONJUNCTION WITH ALL CONSTRUCTION ACTIVITIES AND IN SUCH A MANNER AS TO ENSURE THAT SEDIMENT-LADEN WATER DOES NOT ENTER THE PUBLIC DRAINAGE SYSTEM OR FLOW OFF SITE.
- 4. THE TESC FACILITIES SHALL BE INSPECTED DAILY BY THE CONTRACTOR AND MAINTAINED AS NECESSARY OR AS DIRECTED BY THE ENGINEER TO ENSURE CONTINUOUS FUNCTIONING
- 5, STABILIZED CONSTRUCTION ENTRANCE SHALL BE INSTALLED AT THE BEGINNING OF CONSTRUCTION AND MAINTAINED FOR THE DURATION OF THE PROJECT. ADDITIONAL MEASURES MAY BE REQUIRED TO ENSURE THAT ALL PAVED AREAS ARE KEPT CLEAN FOR THE DURATION OF THE PROJECT.
- 6. ANY AREA STRIPPED OF VEGETATION WHERE NO FURTHER WORK IS ANTICIPATED FOR A PERIOD OF15 DAYS SHALL BE IMMEDIATELY STABILIZED WITH APPROVED TESC METHODS SUCH AS MULCHING, EROSION BLANKETS, PLASTIC SHEETING, OR AS DIRECTED BY THE ENGINEER.
- 7. ALL STEEP SLOPE EXCAVATIONS GREATER THAN 2(H):1(V) SHALL BE COVERED AT THE END OF EACH WORKING DAY.
- 8. VEGETATION NOT WITHIN THE CLEARING AND GRADING LIMITS SHALL NOT BE DISTURBED.
- 9. FIELD VERIFY LOCATION OF EXISTING TREES, BLUEBERRY BUSHES, EDGE OF TRAIL AND TOP OF BANK
- 10. THE TESC FACILITIES ARE THE MINIMUM REQUIREMENTS FOR ANTICIPATED SITE CONDITIONS, DURING THE CONSTRUCTION PERIOD, THESE TESC FACILITIES SHALL BE UPGRADED BY CONTRACTOR AS DIRECTED BY THE ENGINEER FOR UNEXPECTED STORM EVENTS.
- 11. CONTRACTOR SHALL COORDINATE WITH THE CITY AND WIDEW TO ENSURE FISH SALVAGE WITHIN THE PROJECT SITE HAS BEEN ACCOMPLISHED PRIOR TO CONSTRUCTION ACTIVITIES FOLLOWING THE METHODS CONTAINED IN THE HYDRAULIC PROJECT APPROVAL.

- 1. ALL CLEARING & GRADING CONSTRUCTION MUST BE IN ACCORDANCE WITH CITY OF BELLEVUE CLEARING & GRADING CODE. CLEARING & GRADING DEVELOPMENT STANDARDS, LAND USE CODE, UNIFORM BUILDING CODE, PERMIT CONDITIONS, AND ALL OTHER APPLICABLE CODES, ORDINANCES, AND STANDARDS. THE DESIGN ELEMENTS WITHIN THESE PLANS HAVE BEEN REVIEWED ACCORDING TO THESE REQUIREMENTS. ANY VARIANCE FROM ADOPTED EROSION CONTROL STANDARDS IS NOT ALLOWED UNLESS SPECIFICALLY APPROVED BY THE CITY OF BELLEVUE DEVELOPMENT SERVICES (DSD) PRIOR TO CONSTRUCTION.
- IT SHALL BE THE SOLE RESPONSIBILITY OF THE APPLICANT AND THE PROFESSIONAL CIVIL ENGINEER TO CORRECT ANY ERROR, OMISSION, OR VARIATION FROM THE ABOVE REQUIREMENTS FOUND IN THESE PLANS, ALL CORRECTIONS SHALL BE AT NO ADDITIONAL COST OR LIABILITY TO THE CITY OF BELLEVUE
- 2. A COPY OF THE APPROVED PLANS AND DRAWINGS MUST BE ONSITE DURING CONSTRUCTION. THE APPLICANT IS RESPONSIBLE FOR OBTAINING ANY OTHER REQUIRED OR RELATED PERMITS PRIOR TO BEGINNING CONSTRUCTION.
- 3. IMPLEMENTATION OF THE ESC PLANS AND THE CONSTRUCTION, MAINTENANCE, REPLACEMENT, AND UPGRADING OF THESE ESC FACILITIES IS THE RESPONSIBILITY OF THE CONTRACTOR UNTIL ALL CONSTRUCTION IS COMPLETED AND APPROVED AND VEGETATION/LANDSCAPING IS ESTABLISHED. 4. THE ESC FACILITIES SHOWN ON THIS PLAN MUST BE CONSTRUCTED IN CONJUNCTION WITH ALL CLEARING AND GRADING ACTIVITIES. AND IN SUCH A MANNER AS TO ENSURE THAT SEDIMENT AND SEDIMENT
- LADEN WATER DO NOT ENTER THE DRAINAGE SYSTEM, ROADWAYS, OR VIOLATE APPLICABLE WATER STANDARDS. 5. THE ESC FACILITIES SHOWN ON THIS PLAN ARE THE MINIMUM REQUIREMENTS FOR ANTICIPATED SITE CONDITIONS. DURING THE CONSTRUCTION PERIOD, THESE ESC FACILITIES SHALL BE UPGRADED AS NEEDED
- 6. THE BOUNDARIES OF THE CLEARING LIMITS SHOWN ON THIS PLAN SHALL BE CLEARLY FLAGGED IN THE FIELD PRIOR TO CONSTRUCTION, DURING THE CONSTRUCTION PERIOD, NO DISTURBANCE BEYOND THE FLAGGED CLEARING LIMITS SHALL BE PERMITTED. THE FLAGGING SHALL BE MAINTAINED BY THE APPLICANT/CONTRACTOR FOR THE DURATION OF CONSTRUCTION.
- 7. ALL CLEARING LIMITS SHALL BE VISIBLY MARKED PRIOR TO CLEARING.
- 8. CLEARING SHALL BE LIMITED TO THE AREAS WITHIN THE APPROVED CLEARING AND GRADING LIMITS. FROM MAY 1ST THROUGH SEPTEMBER 30TH, EXPOSED SOILS MUST BE COVERED AT THE END OF EACH CONSTRUCTION WEEK AND ALSO AT THE THREAT OF RAIN.
- 9. STABILIZED CONSTRUCTION ENTRANCES SHALL BE INSTALLED AT THE BEGINNING OF CONSTRUCTION AND MAINTAINED FOR THE DURATION OF THE PROJECT

FOR LINEXPECTED STORM EVENTS AND TO ENSURE THAT SEDIMENT AND SEDIMENT-LADEN WATER DO NOT LEAVE THE SITE-

- 10. THE CONTRACTOR MUST MAINTAIN A SWEEPER ON SITE DURING EARTHWORK AND IMMEDIATELY REMOVE SOIL THAT HAS BEEN TRACKED ONTO PAVED AREAS AS RESULT OF CONSTRUCTION.
- 11. THE ESC FACILITIES SHALL BE INSPECTED DAILY BY THE APPLICANT/CONTRACTOR AND MAINTAINED AS NECESSARY TO ENSURE THEIR CONTINUED FUNCTIONING. 12. ANY FXCAVATED MATERIAL REMOVED FROM THE CONSTRUCTION SITE AND DEPOSITED ON PROPERTY WITHIN THE CITY LIMITS MUST BE DONE IN COMPLIANCE WITH A VALID CLEARING & GRADING PERMIT
- LOCATIONS FOR THE MOBILIZATION AREA AND STOCKPILED MATERIAL MUST BE APPROVED BY THE CLEARING AND GRADING INSPECTOR AT LEAST 24 HOURS IN ADVANCE OF ANY STOCKPILING.
- 13. TO REDUCE THE POTENTIAL FOR EROSION OF EXPOSED SOILS, THE FOLLOWING BEST MANAGEMENT PRACTICES (BMPS) ARE REQUIRED: PRESERVE NATURAL VEGETATION FOR AS LONG AS POSSIBLE OR AS REQUIRED BY THE CLEARING & GRADING INSPECTOR, PROTECT EXPOSED SOIL USING PLASTIC (EC-14), EROSION CONTROL BLANKETS, STRAW OR MULCH (CITY OF BELLEVUE GUIDE TO MULCH MATERIALS, RATES AND USE CHART), OR AS DIRECTED BY THE CLEARING & GRADING INSPECTOR. INSTALL CATCH BASIN INSERTS AS REQUIRED BY THE CLEARING & GRADING INSPECTOR OR PERMIT CONDITIONS OF APPROVAL. INSTALL SEDIMENTATION TANKS OR OTHER SEDIMENT CONTROL FACILITIES.
- 14. PUBLIC INFORMATION SIGN LISTING 24-HOUR EMERGENCY PHONE NUMBERS FOR THE CITY AND THE CONTRACTOR MAY BE PROVIDED TO THE APPLICANT AT THE TIME THE CLEARING & GRADING PERMIT IS ISSUED. THE APPLICANT MUST POST THE SIGN AT THE PROJECT SITE IN FULL VIEW OF THE PUBLIC AND THE CONTRACTORS, AND IT MUST REMAIN POSTED UNTIL FINAL SIGN-OFF BY THE CLEARING & GRADING
- 15. TURBIDITY MONITORING MAY BE REQUIRED AS A CONDITION OF CLEARING & GRADING PERMIT APPROVAL. IF REQUIRED, TURBIDITY MONITORING MUST BE PERFORMED IN ACCORDANCE WITH THE APPROVED TURBIDITY MONITORING PLAN AND AS DIRECTED BY THE CLEARING & GRADING INSPECTOR, MONITORING MUST CONTINUE DURING SITE (EARTHWORK) CONSTRUCTION UNTIL THE FINAL SIGN-OFF BY THE CLEARING & GRADING INSPECTOR

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GEND, ABBREVIATION GENERAL NOTES

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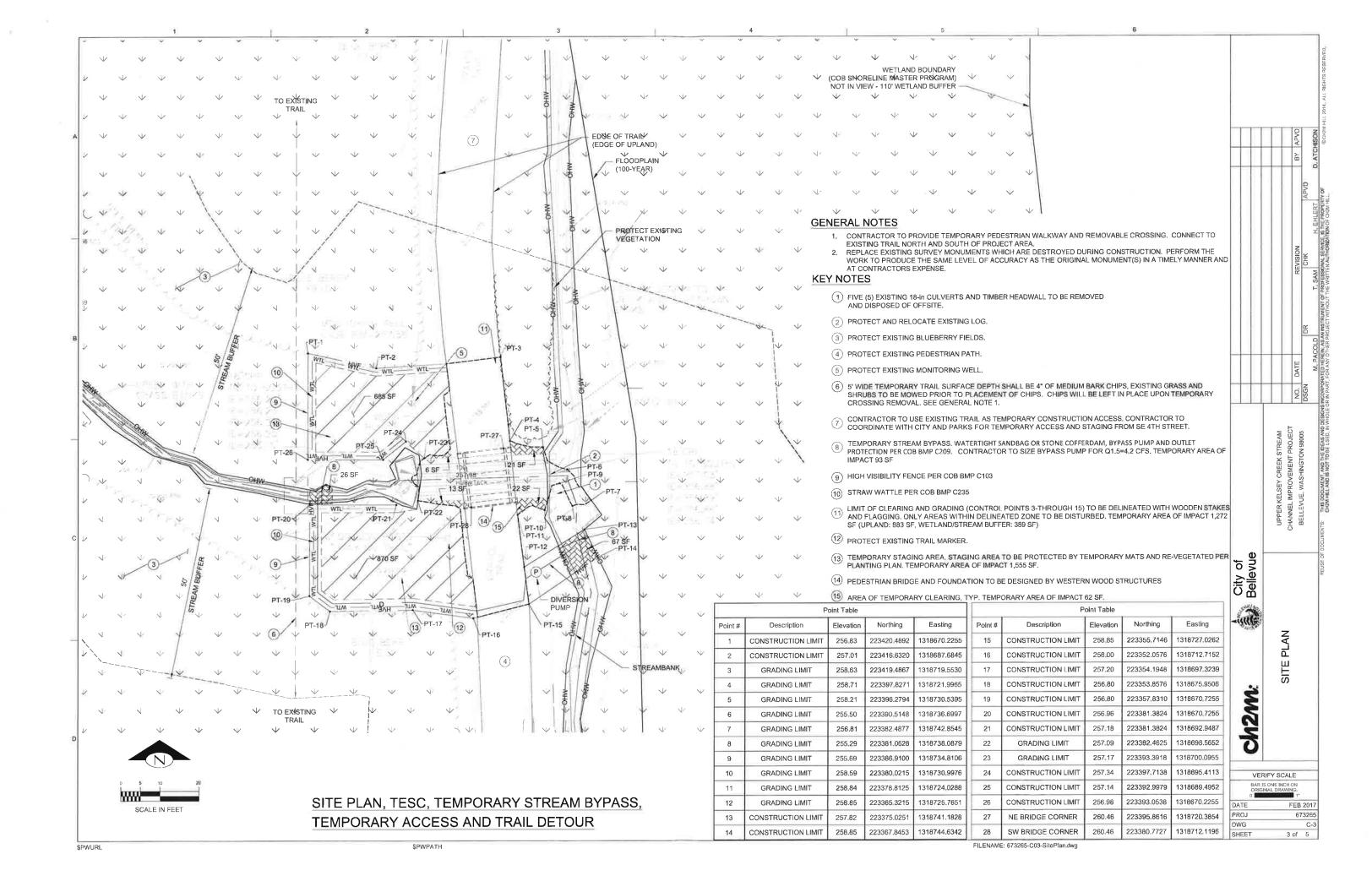
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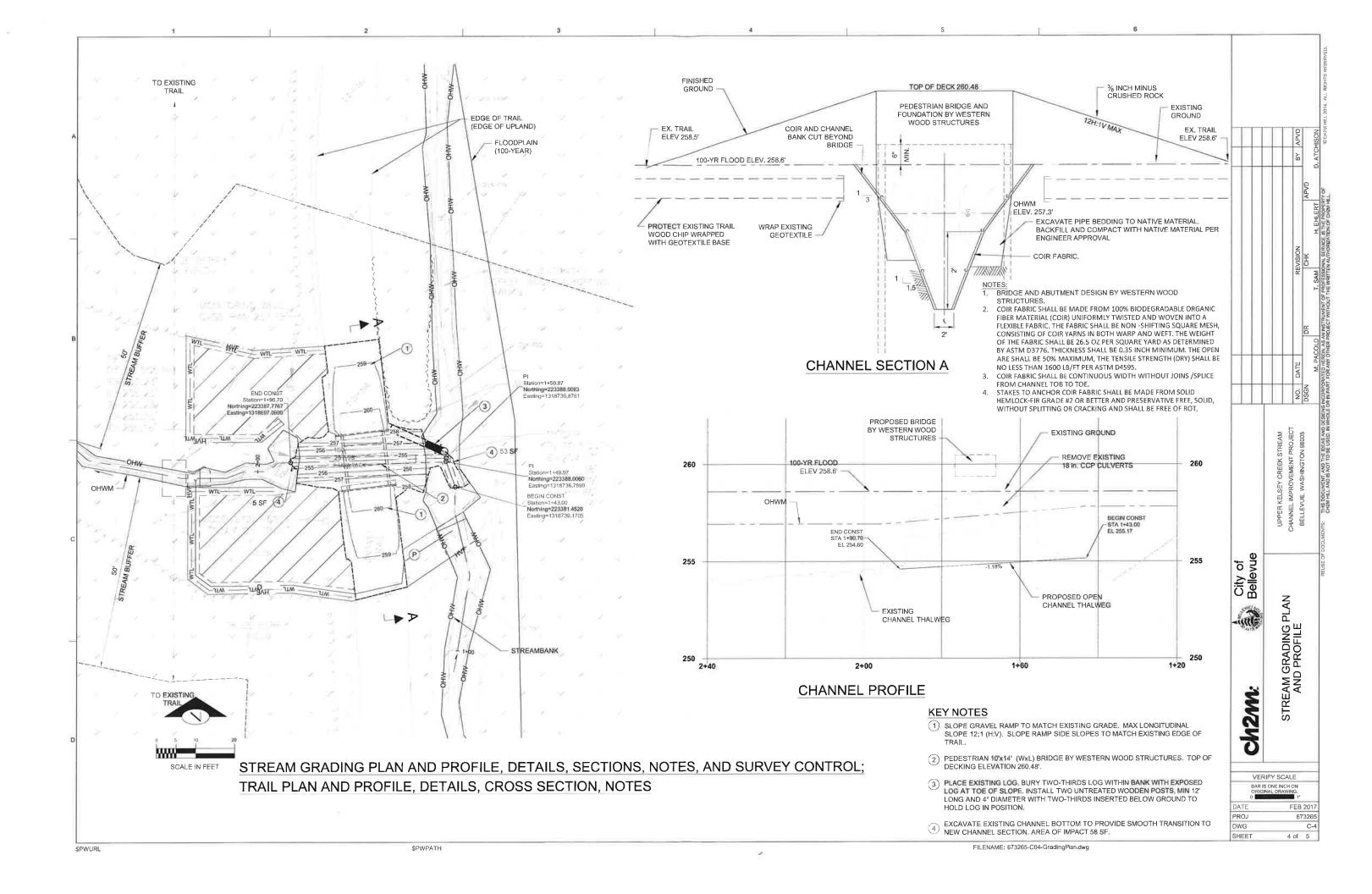
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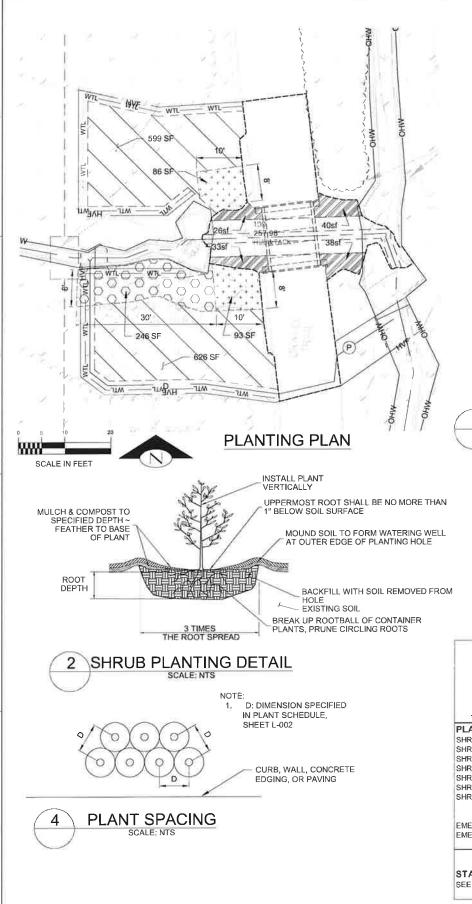
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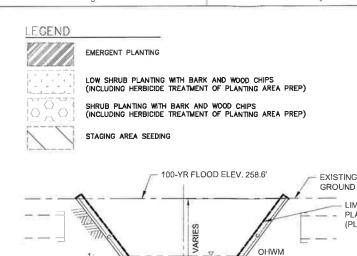
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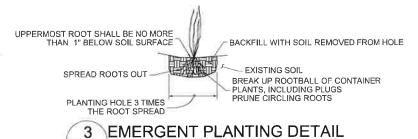








1 CHANNEL SECTION (NOT UNDER BRIDGE)



ELEV. 257.3'

COIR FABRIC.

#### PLANTING NOTES

- ALL REVEGETATION WORK SHALL BE PERFORMED BY A LANDSCAPE CONTRACTOR HOLDING A VALID CURRENT SPECIALTY CONTRACTOR'S LICENSE FROM THE STATE OF WASHINGTON TO SUPERVISE AND DIRECT CONTRACTOR'S SEEDING, AND PLANTING LAYOUT AND INSTALLATION IN ACCORDANCE WITH APPROVED LANDCAPING INDUSTRY STANDARDS AND PRACTICES,
- AT LEAST THREE MONTHS PRIOR TO PLANTING, THE CONTRACTOR SHALL SUBMIT DOCUMENTATION
  OF THE SOURCE OF PLANT MATERIALS. SHRUBS SHALL BE OBTAINED FROM SOURCES IN WESTERN
  WASHINGTON, AND PREFERRABLY FROM LOCAL SOURCES IN NORTHWESTERN WASHINGTON.
- 3. NO SUBSTITUTION OF PLANT MATERIAL, SPECIES OR VARIETY, WILL BE PERMITTED UNLESS EVIDENCE IS SUBMITTED IN WRITING TO THE ENGINEER THAT A SPECIFIED PLANT CANNOT BE OBTAINED AND HAS BEEN UNOBTAINABLE SINCE THE AWARD OF THE CONTRACT.
- PLANT SELECTION SHALL BE CONSISTENT WITH THE BELLEVUE LAND USE CODE, SECTION 20,20.520, AND LANDSCAPE DEVELOPMENT.
- PROHIBITED MATERIALS, PLANTS LISTED AS PROHIBITED IN THE BELLEVUE LAND USE CODE ARE PROHIBITED IN REQUIRED LANDSCAPE AREAS.
- ALL PLANTS SHALL CONFORM TO AMERICAN ASSOCIATION OF NURSERYMEN (AAN) GRADES AND STANDARDS AS PUBLISHED IN THE "AMERICAN STANDARD FOR NURSERY STOCK" MANUAL.
- PLANTS SHALL MEET THE MINIMUM SIZE STANDARDS ESTABLISHED IN OTHER SECTIONS OF BELLEVUE LAND USE CODE, SECTION 20.20.520 LANDSCAPE DEVELOPMENT.
   AT LEAST ONE MONTH PRIOR TO SEEDING AND PLANTING, NOTIFY ENGINEER FOR A
- AT LEAST ONE MONTH PRIOR TO SEEDING AND PLANTING, NOTIFY ENGINEER FOR A
  PRE\_INSTALLATION CONFERENCE TO REVIEW AND DISCUSS REQUIREMENTS FOR SEEDING AND
  PLANTING
- IN AREAS COMPACTED DURING CONSTRUCTION, TILL TO A MINIMUM DEPTH OF 12 INCHES, AS APPROVED BY THE ENGINEER.
- 10. ANY DISTURBANCE TO EXISTING VEGETATION BEYOND THE DISTURBANCE LIMITS SHOWN ON THE PLANS SHALL BE RESTORED IN-KIND TO EXISTING CONDITIONS BY THE CONTRACTOR AT NO COST TO THE OWNER.
- 11. NOTIFY ENGINEER FOR APPROVAL AFTER SOIL IS PREPARED FOR SEEDING, AFTER ENGINEER APPROVES AREAS FOR SEEDING, APPLY SEED MIX INDICATED TO AREAS SHOWN USING HYDROSEEDER, SEED SHALL BE APPLIED BY OCTOBER 1.
- 12. PREPARE SHRUB PLANTING AREAS:
- A,BY SEPTEMBER 1, SPRAY PLANTING AREA USING HERBICIDE APPROVED FOR APPLICATION IN WETLANDS TO COMPLETELY KILL ALL VEGETATION WITHIN SHRUB PLANTING AREAS INCLUDING BUT NOT LIMITED TO REED CANARYGRASS, PREVENT SPRAY AND DRIFT FROM ENTERING KELSEY CREEK.
- B. NOTIFY ENGINEER FOR APPROVAL WHEN VEGETATION WITHIN SHRUB PLANTING AREAS HAS BEEN KILLED AND IS PREPARED AS SPECIFIED AND READY FOR PLANTING AND BARK/WOOD CHIP PLACEMENT.
- 13. NOTIFY ENGINEER AT LEAST 1 WEEK PRIOR TO WHEN PLANTS ARE SCHEDULED TO BE DELIVERED AND INSPECTED, AND WHEN PLANTING WILL OCCUR.
- 14. NOTIFY ENGINEER WHEN PLANTING LAYOUT IS STAKED FOR ENGINEER APPROVAL. AFTER ENGINEER APPROVES THE CONTRACTOR'S PLANT LAYOUT, INSTALL PLANTS IDENTIFIED ON THE PLANT MATERIALS LIST ACCORDING TO THE TRIANGLE SPACING AND GROUPINGS INDICATED, PER PLANTING DETAILS, OR AS DIRECTED BY THE ENGINEER.
- 15. PLANT SHRUBS:
- A, DURING PLANTING REMOVE CONTAINERS AND/OR BIODEGRADABLE POTS, LOOSEN ROOTS AND SPREAD OR CUT CIRCLING ROOTS.
- B, ADD ONE FERTILIZER PACKET (REFOREST TECHNOLOGIES INTERNATIONAL RTI FOREST PAK 20\_11-9, OR SIMILAR) TO EACH PLANTING HOLE AS RECOMMENDED BY THE MANUFACTURER. C. FIRM SOIL AROUND THE ROOT BALL.
- D.IMMEDIATELY AFTER PLANTING EACH PLANT, WATER PLANT SLOWLY AND THOROUGHLY.
- 16. NOTIFY ENGINEER FOR APPROVAL OF BARK OR WOOD CHIP PLACEMENT IN SHRUB PLANTING AREAS. AFTER ENGINEER APPROVES AREAS FOR BARK OR WOOD CHIP PLACEMENT, APPLY MINIMUM 6-INCH DEPTH OF BARK OR WOOD CHIPS IN ENTIRE SHRUB PLANTING AREA. ENSURE THAT BARK OR WOOD CHIPS DO NOT TOUCH PLANT STEMS AND KEEP BACK 2 INCHES FROM PLANT STEMS.
- 17. FOR PLANTING EMERGENTS, CAREFULLY CUTTHROUGH COIR EROSION CONTROL FABRIC TO CREATE HOLES NO LARGER THAN NEEDED TO INSTALL EACH PLANT, AS APPROVED BY ENGINEER.
- 18. NOTIFY ENGINEER TO SCHEDULE INSPECTIONS AND ACCEPTANCE OF SEEDING AND PLANTING, REMOVE ALL TAGS AFTER FINAL PLANT INSPECTION.
- 19., REMOVE ALL NON-BIODEGRADIBLE DEBRIS (SUCH AS, PLASTIC TAGS, SYNTHETIC TWINE, AND CONTAINERS).

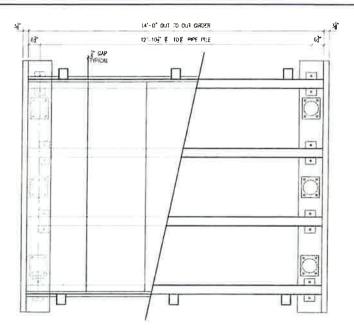
		Estimated Planting Area (Square Feet):		180	140	250	1200	1770				
TYPE	BOTANICAL NAME	COMMON NAME	WETLAND INDICATOR STATUS		EMERGENTS - North & South Sides	SHRUBS - South Side Only	SEEDING - Staging Area	TOTAL QUANT		Size	ROOT CONDITION	REMARKS
PLANTS												
SHRUB	CORNUS FLAVIRAMEA	YELLOW-TWIG DOGWOOD	*	0.00	: <b>:</b>	4	500	4	4'	12-18" HEIGHT	#1 GAL CONTAINER	PLANT IN GROUPS OF 2-4
SHRUB	CORNUS SERICEA VAR KELSII	DWARF RED-OSIER DOGWOOD	*:	10		-	250	10	3.5	12-18" HEIGHT	#1 GAL CONTAINER	PLANT IN GROUPS OF 2-4
SHRUB	CORNUS SERICEA	RED-OSIER DOGWOOD	FACW			4		4	4'	12-18" HEIGHT	#1 GAL CONTAINER	PLANT IN GROUPS OF 2-4
SHRUB	LONICERA INVOLUCRATA	BLACK TWINBERRY	FAC	7.2		4		4	4'	12-18" HEIGHT	#1 GAL CONTAINER	PLANT IN GROUPS OF 2-4
SHRUB	MYRICA GALE	SWEET GALE	OBL	10	-	4	0.00	14	3.5	12-18" HEIGHT	#1 GAL CONTAINER	PLANT IN GROUPS OF 2-4
SHRUB	ROSA PISOCARPA	PEAFRUIT ROSE	FAC	0.00		4		4	4'	12-18" HEIGHT	#1 GAL CONTAINER	PLANT IN GROUPS OF 2-4
SHRUB	RUBUS SPECTABILIS	SALMONBERRY	FAC+			4		4	4'	12-18" HEIGHT	#1 GAL CONTAINER	PLANT IN GROUPS OF 2-4
		SHRUB SUBTOTAL	_	20	0	24	0	44				
EMERGENT	CAREX OBNUPTA	SLOUGH SEDGE	OBL		90	3		90	1(0)		PLUG	PLANT IN GROUPS of 10-20
EMERGENT	SCIRPUS MICROCARPUS	SMALL-FRUITED BULRUSH	OBL	100	90	- 2		90	195		PLUG	PLANT IN GROUPS of 10-20
		EMERGENT SUBTOTAL		0	180	0	0	180				
	TOTAL			20	180	24	0	224				
STAGING A	REA SEED MIX								TOTAL			
SEED	DESCHAMPSIA CESPITOSA	TUFTED HAIRGRASS	FACW	1967	(4)	- 24	1.0	1.0	POUNDS PLS			
				0.0	0.0	0.0	1.0	1.0	POUNDS PLS			

LIMITS OF EMERGENT PLANTINGS

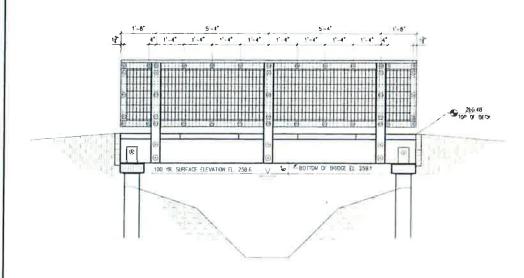
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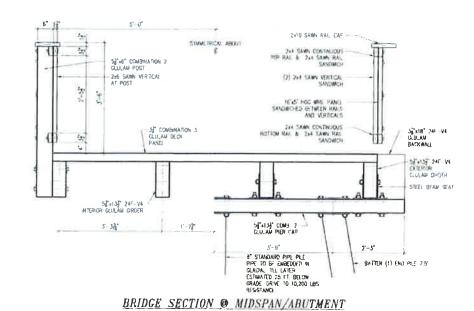
5 PLANT MATERIALS LIST

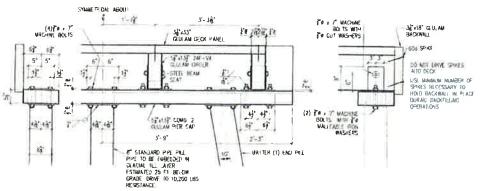
City of Bellevue AND DETAILS PLAN **PLANTING** ch2m VERIFY SCALE DATE FEB 201 67326 DWG SHEET 5 of 5



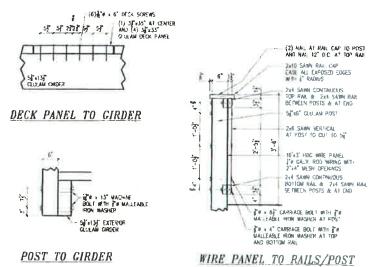
CUT-AWAY BRIDGE PLAN VIEW







PIPE PILE TO MUDSILL & GIRDER TO MUDSILL



DESIGN CRITERIA

GOVERHING CODES

ASSITO LEFD GUIDE SPECIFICATIONS FOR THE DESIGN OF
\*\*OFSTRIAN BRIDGES, ZOOS

ASSITO LEFD BRIDGE DESIGN SPECIFICATIONS (ZOTO)

ASSITO STANDARD SPECIFICATIONS FOR STRUCTURAL
SUPPORTS FOR HICHMAY SIGNS, I LUMINAIRES AND TRAFFIC

LIVE LOAD VEHICLE LOAD WIND LOAD SEISHIC

90 PSF 16,500 US 85 MPH - EXPOSURE C SEISMIC DESIGN PER AASH10 PGA = 0 423g St = 0 94g St = 0 3.3g SITE CLASS 0 ZONL 4

#### GLULAM SPECIFICATIONS

MATERIAL

ADHESTIVE FARRICATION

WEST CHAST DOUGLAS FIR 24F-V4, CUMB 2
OR COMB IT AS NOTED
WATERPROOF PHENOLIC
AS SHOWN AND MOTEO MACHINE INCISS
ALL CLULAN
AS SHOWN A NOTEO
SEE TREATMENT SPECIFICATIONS
NOME

SEE TREATMENT SPECIFICATI NONE ANSI 117-2010 / APA-ENS CERT IF ICATE

GLULAM MATERIAL INCLUDES GITDERS, DEDX PANELS POSTS & BADGWALLS

#### SAWN LUMBER SPECIFICATIONS

MEST COAST DOUGLAS FIR #) PER NOLID GRADING RULES #16 AS SHOWN & MOTED AS NOTED SEE TREATMENT SPECIFICATIONS MATERIAL FARRICATION

SUF ACE FINISH

#### STEEL SPECIFICATIONS:

STEEL SHAPES ASTW A36 HARDMANE ASTW A367 HDT DIP GALVANIZE ALL STEEL SHAPES AFTER FABRICATION HDT DIP GALVANIZE ALL HARDWARE

ALL MELDING TO BE PER AMS SPECIFICATIONS BY CERTHIED MELDERS - TREAT ALL FIELD MODIFICATIONS MY COLD GALVANIZING PAINT

#### TREATMENT SPECIFICATIONS:

ALL DIMENSIONED DUTS AND HOLES IN TIMBER MATERIAL SHALL BE MADE PATOR TO PRESSURE "PLAINENT TREAT ALL FIELD CUITS AND BORES WITH DOMPS NAPHTERATE IN ACCORDANCE WITH AMPA SPECIFICATION MA

A IREAT COLULAN MATERIAL WITH COPPER MAPHIMENATE TO A MINIMAM NET RETENTION OF 0.06 PCF PER AMPA SPECIFICATION CC20 ::SSUE CERFIFICATION OF TREATMENT

A TREAT SAME LIABER WITH COPPER MAPITHEMATE TO A MINIMAM NET RETENTION OF 0 06 PCF PER AMPA SPECIFICATION C2

-407E---

THE LUMBER AND GLULAN ON THIS PROJECT ARE PRESSURE TREATED INTO HOPPER MAPPIREMENT WHICH INSURES A LONG AND USEFUL STRYLE LIFE. MOPONEN SHOULD USE COMMON SENSE IN HANDLING THESE TREATED THANGES AND TO DIRECT SKIN CONTINUENT WITH THE PRESERVATIVE BY MEARING RUGBER WORK CLOVES, LONG SLEEVE SHITS, AND LONG PARTS, WHEN TRAITED MODE IS FLEID FABRICATED. WORKNEN SHOULD ALSO WEAR A FACE MASK AND COGG.ES.

A 11 MAY BIL DIFFICULT TO APPLY CERTAIN PAINT OR STAIN FINISHES

TO PRESSURE HEARTED TIMBERS THEARTED WITH COPPER
MAPHIFAMENT SHOULD HOW BE CONSIDERED AS PARTIABLE WITH

ALL SOLVENT HAS ESCAPED HIMS RECOMMENDS USING A

PENETRALING PIONENTED STAIN THAT DOES NOT FORM A COATING

ON THE WOOD SHRFACES

IT BRIDGE MATERIAL IS TO BE STOCK PILED AT THE STIE. IT MAST BE STOWLD IN A LEVEL AREA AND STRUKENED APPROXIMATELY EVERY 6 FECT IF THE MATERIAL IS STORED IN A HOT. UNIT CLIMATE, IT MAST ALSO BE CONTRED WITH PLYMODO OR OTHER MATERIAL TO PROTECT IT. FAILURE TO STRUKEN AND COVER MAY CAUSE WARPING MOD EXCESSIVE SEASONING OTHERS.

#### SPECIAL INSPECTION:

A STEEL WELDING

PERIODIC FOR STAGLE PASS FILLET WELDS & OR LESS IN SYZE CONTINUOUS FOR MAILTIPLE PASS FILLET WELDS, PARTIAL JOINT PENETRATION AND COMPLETE JOINT PENETRATION WELDS

VERIFY ELEMENT MATERIAL, SIZES AND LENGTH COMPLY WITH

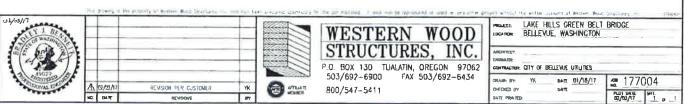
VERIFY ELEMENT MATERIAL, SIZES AND LENGTH COMPLY WITH HEQUITEDENTS.

DELIBRATE DAPACHIES OF TEST ELEMENTS AND CONDUCT ADDITIONAL FOAD TESTS, AS REQUIRED.

CONTINUOUS DESERVATION OF DELIVING OPERATIONS AND MAINTAIN COMPLETE AND ACCURATE RECORDS OF EACH FLEENINT VERIFY PLACEMENT LOCATIONS AND PLUMBNISS, OR LERMING REQUIRED FOR ADAPACTY, RECORD TO ADAPACTY, RECORD TO ADAPACTY AND THE AND BUTTO PER ADAPACTYS AND OWNERS OF SOME THE AND BUTTO ELEMENT AND THE ADAPACTY AND THE AND BUTTO ELEMENT.

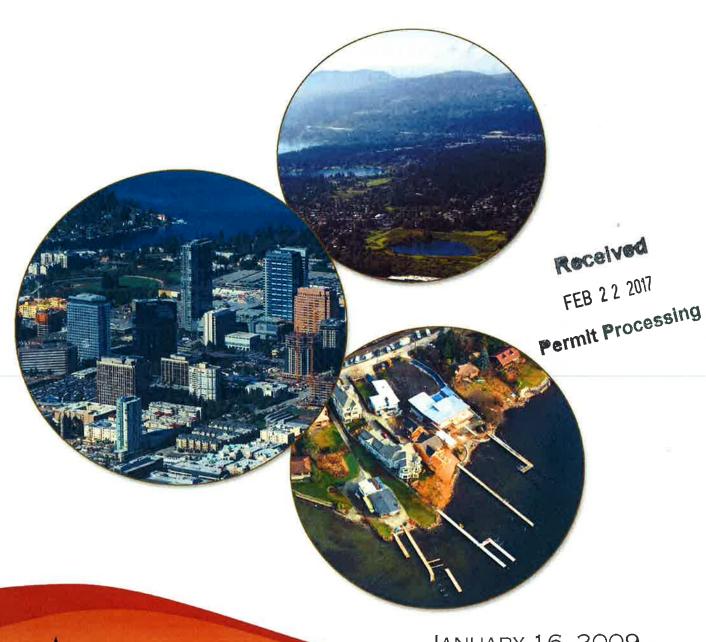
THESE INSPECTIONS WILL BE PERFORMED BY A REGISTERIO DEPUTY INSPECTOR OR OTHER DUALIFIED PERSON APPROVED BY OWNER'S REPRESENTATIVE. THE SOLLS KNOWER AND THE BUILDING DEPARTMENT AND THE COSTS OF SUCH INSPECTION WILL BE TAID OF THE OWNER ADDITIONAL INSPECTION WILL BE AS REQUIRED BY THE OWNER'S REPRESENTATIVE AND/OR THE BUILDING DEPARTMENT.

#### **PERMIT SET - NOT FOR CONSTRUCTION**



### SHORELINE ANALYSIS REPORT

TECHNICAL APPENDIX VOLUME I: SHORELINE INVENTORY REPORT - WETLANDS







JANUARY 16, 2009 FINALIZED 10/9/2015

# SHORELINE INVENTORY REPORT – Technical Appendix Volume I - Wetlands City of Bellevue's Shorelines: Lake Washington, Lake Sammamish, Phantom Lake, Kelsey Creek and Mercer Slough

**Project: Shoreline Master Program Update** 

• Task 1.3.3: Develop Shoreline Wetlands Inventory

#### Prepared by:



City of Bellevue Planning & Community Development 450 110th Ave. NE Bellevue, WA 98009

#### Prepared by:



750 Sixth Street South Kirkland, WA 98033

31 August 2008

The portion of the shoreline outside of the Lake Hills Greenbelt Park is largely privately owned and consists of lawn, some shrubs and trees adjacent to the shoreline. The aquatic bed, water ward of the shoreline is dominated by American white water lily and yellow pond lily.

The Category II wetland scores moderately for water quality function and high for habitat and hydrologic function. The area of seasonal ponding, an important indication of the wetland's water quality improvement ability, is slightly smaller relative other neighboring units. The live storage of Phantom Lake helps to diffuse flooding in both Kelsey and Phantom Creeks. Phantom A, as with the greater complex, contains several vegetative and structural components. The scrub-shrub and forest strata along the Phantom Lake shoreline provide structural complexity. Snags located along the Phantom Lake shoreline, downed woody debris in the forest stratum, and the undulating vegetation along the shoreline provide abundant niches for birds, mammals and amphibians.

#### 3.5.2 Phantom B

This approximately 39-acre Category I wetland is bordered by SE 16<sup>th</sup> Street to the south and SE Lake Hills Boulevard to the north. 156<sup>th</sup> Ave SE runs through the middle of the wetland but does not divide it into separate units, as water velocity through the culvert is very low. The upper reach of Kelsey Creek flows through the wetland in a low-gradient ditch.

Phantom B, also within the Lake Hills Greenbelt Park, contains a variety of land uses. Active farm fields adjacent to 156<sup>th</sup> Street SE comprise approximately 10 percent of the wetland area. A trail extends the length of the wetland from north to south. The remaining area is largely open space characterized by forest, scrub-shrub, and emergent vegetation.

Notable is the three acres of coniferous forested located along the wetland's west edge. Two late-succession species, western red cedar and western hemlock, dominate the closed canopy of the forest, beneath which lady fern, giant horsetail and sword fern carpet the understory. The wetland forest provides significant wildlife habitat as reflected on the rating form. This area contains snags and downed woody debris that typically provide foraging and nesting sites for birds, amphibians and mammals. The coniferous forest transitions to a pacific- and Sitka willow-dominated deciduous forest, and then to a scrub-shrub layer of Douglas spirea and Sitka willow closer to the Kelsey Creek. The creek is bordered by a reed canarygrass monoculture.

Phantom B scores high on Ecology's Rating Form due in part to the diverse vegetation strata described above. Additionally, this unit contains an abundance of smaller seasonally and occasionally flooded depressions that improve its ability to store and diffuse flood flow during storm events. As with other units in the complex, the widespread organic soils indicate an ability to remove pollutants from surface water.

#### 3.5.3 Larsen A

Larsen A, an approximately 88-acre wetland, contains Larsen Lake, a portion of Kelsey Creek, and an unnamed tributary. The wetland extends from SE Lake Hills Boulevard to the south edge of the Kmart shopping center. The wetland is composed of riverine and depressional hydrogeomorphic classes.

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Land uses in the wetland include blueberry farming, trails open to the public, and open space. 148<sup>th</sup> Avenue SE bisects the wetland just west of Larsen Lake, but does not warrant a division into separate units. The wetland contains forest, scrub-shrub, emergent, aquatic bed, and open water habitat types. The agricultural area is made up of 4- to 6-foot-tall blueberry plants that generally provide higher year-round structural complexity than the other farms contained within the complex.

An approximately 1-acre patch of forested wetland, dominated by Sitka spruce (*Picea sitchensis*, FACW) and western red cedar, is located at the south end of the Category II wetland. Himalayan blackberry and lady fern carpet the understory. As with the coniferous forest component in Phantom B, this grove contains snags, downed woody debris and a structural complexity desirable for wildlife, which is reflected in the high habitat function score for Larson A. The wetland contains another forested stratum, north of Larson Lake. European silver birch, pacific, and Sitka willow, black cottonwood and red alder exhibit an array of habitat features including snags, downed woody debris and overhanging vegetation. The forest transitions to Douglas spirea, blueberry bushes, and eventually Larsen Lake. The various vegetation types, from aquatic bed, to coniferous forest, provide complex structural and compositional diversity that increase suitability for amphibians, birds and mammals. The organic soil found throughout most of the wetland area, as mentioned above, has the ability to remove dissolved phosphorus and nitrogen from surface water (Ecology 2004, p 39). Additionally, the emergent vegetation along Kelsey Creek slows surface water velocity during storms, and may filter out particles that otherwise would flow downstream.

#### 3.5.4 Larsen B

The 3.5-acre Larsen B wetland lies west of 145<sup>th</sup> Place SE and Larsen A, and is located along a small tributary to Kelsey Creek. Groundwater and occasional surface flow from Main Street provide the depressional component of the wetland a significant portion of its hydrology. Overbank flooding from the tributary provides some wetland hydrology along the banks of the stream. The wetland is largely open space, though its western edge lies within the maintained grounds of Sammamish High School.

The Category II wetland contains a pacific- and Sitka willow-dominated forest with black cottonwood and red alder interspersed along the edge. Although this wetland contains fewer habitat types than areas in the other portion of the Phantom/Larsen complex, it scores relatively high on habitat function due high structural diversity. A Salmonberry and black twinberry thicket fill in beneath the forest canopy along with some stinging nettle and piggyback plant (Tolmiea menziesii, FAC+). Some small snags and large woody debris may provide a few nesting and foraging sites for reptiles and amphibians. However, roadways and buildings isolate the wetland from other habitat types. The Category II wetland provides a moderate level of flood storage, and water quality improvement function. The thick vegetation along the shores of the small tributary slows the velocity of water during storm events, helping also to filter particles from the water. The occasionally flooded depression diffuses flood flow and sequesters pollution during storm events.



Wetland Rating Form

# WETLAND RATING FORM - WESTERN WASHINGTON

 $Version\ 2-Updated\ July\ 2006\ to\ increase\ accuracy\ and\ reproducibility\ among\ users$ 

Name of wetland: Larsen A Wetland Date of site	visit: May 2, 2008		
SEC: <u>02, 34, 35</u> TWNSHP: <u>24, 25 N</u> RNGE: <u>05 E</u> Is S/T/R in A	Appendix D Yes ☐ No 区		
* Staff training received in UW Wetland Certificate program			
Estimated Size 88 acres	-		
SUMMARY OF RATING	FEB 2 2 2017 Permit Processin		
Category based on FUNCTIONS provided by wetland  I  II  II  II  IV  III  IV  IV			
Category I = Score >70  Category II = Score 51-69  Category III = Score 30-50  Category IV = Score < 30  Score for Water Quality III Score for Hydrologic III Score for Habitat III TOTAL score for III	Functions 24 Functions 26		
Category based on SPECIAL CHARACTERISTICS of wetland			
I □ II □ Does not Apply ⊠  Final Category (choose the "highest" category from above)  II			

Check the appropriate type and class of wetland being rated.

Wetland Type		Wetland Class	ÚV.
Estuarine		Depressional	X
Natural Heritage Wetland		Riverine	X
Bog		Lake-fringe	
Mature Forest		Slope	
Old Growth Forest		Flats	
Coastal Lagoon		Freshwater Tidal	
Interdunal			
None of the above	X	Check if unit has multiple HGM classes present	X

## Does the wetland unit being rated meet any of the criteria below?

If you answer YES to any of the questions below you will need to protect the wetland according to the regulations regarding the special characteristics found in the wetland.

Check List for Wetlands That May Need Additional Protection (in addition to the protection recommended for its category)	YES	NO
SP1. Has the wetland unit been documented as a habitat for any Federally listed Threatened or Endangered animal or plant species (T/E species)? For the purposes of this rating system, "documented" means the wetland is on the appropriate state or federal database.		*x
SP2. Has the wetland unit been documented as habitat for any State listed Threatened or Endangered animal species?  For the purposes of this rating system, "documented" means the wetland is on the appropriate state database. Note: Wetlands with State listed plant species are categorized as Category I Natural Heritage Wetlands (see p. 19 of data form).		х
SP3. Does the wetland unit contain individuals of Priority species listed by the WDFW for the state?		x
SP4. Does the wetland unit have a local significance in addition to its functions? For example, the wetland has been identified in the Shoreline Master Program, the Critical Areas Ordinance, or in a local management plan as having special significance.		х

<sup>\*</sup> Washington Department of Fish and Wildlife Priority Habitats and Species Data have not been requested in the course of this initial review for this project.

# To complete the next part of the data sheet you will need to determine the Hydrogeomorphic Class of the wetland being rated.

The hydrogeomorphic classification groups wetlands into those that function in similar ways. Classifying the wetland first simplifies the questions needed to answer how it functions. The Hydrogeomorphic Class of a wetland can be determined using the key below. See p. 24 for more detailed instructions on classifying wetlands.

# Classification of Wetland Units in Western Washington

If the hydrologic criteria listed in each question do not apply to the entire unit being rated, you probably have a unit with multiple HGM classes. In this case, identify which hydrologic criteria in Questions 1-7 apply, and go to Question 8.

1.	Are the water levels in the wetland unit usually controlled by tides (i.e. except during floods)? $\square$ NO – go to 2 $\square$ YES – the wetland class is <b>Tidal Fringe</b>
	If yes, is the salinity of the water during periods of annual low flow below 0.5 ppt (parts per thousand)? YES – Freshwater Tidal Fringe NO – Saltwater Tidal Fringe (Estuarine)
	If your wetland can be classified as a Freshwater Tidal Fringe use the forms for Riverine wetlands. If it is Saltwater Tidal Fringe it is rated as an Estuarine wetland. Wetlands that were called estuarine in the first and second editions of the rating system are called Salt Water Tidal Fringe in the Hydrogeomorphic Classification. Estuarine wetlands were categorized separately in the earlier editions, and this separation is being kept in this revision. To maintain consistency between editions, the term "Estuarine" wetland is kept. Please note, however, that the characteristics that define Category I and II estuarine wetlands have changed (see p. ).
2.	The entire wetland unit is flat and precipitation is only source (>90%) of water to it.  Groundwater and surface water runoff are NOT sources of water to the unit  NO − go to 3
	If your wetland can be classified as a "Flats" wetland, use the form for <b>Depressional</b> wetlands.
3.	Does the entire wetland unit <b>meet both</b> of the following criteria?  The vegetated part of the wetland is on the shores of a body of open water (without any vegetation on the surface) at least 20 acres (8 ha) in size;  At least 30% of the open water area is deeper than 6.6 ft (2 m)?
	$\boxtimes$ NO – go to 4 $\square$ YES – The wetland class is Lake-fringe (Lacustrine Fringe)
4.	Does the entire wetland unit meet all of the following criteria?  ☐ The wetland is on a slope (slope can be very gradual), ☐ The water flows through the wetland in one direction (unidirectional) and usually comes from seeps. It may flow subsurface, as sheetflow, or in a swale without distinct banks. ☐ The water leaves the wetland without being impounded?  NOTE: Surface water does not pond in these types of wetlands except occasionally in very small and shallow depressions or behind hummocks (depressions are usually <3ft diameter and less than a foot deep).  ☐ YES – The wetland class is Slope
	$\square$ 110 – 80 to 3 $\square$ 1 152 – 1 lie wettand class is slope

	5. Does the entire wetland unit <b>meet all</b> of the following criteria?
	The unit is in a valley, or stream channel, where it gets inundated by overbank flooding from that stream or river.
	The overbank flooding occurs at least once every two years
	NOTE: The viscoving emit can contain democritise that we fill devite the state of t
	NOTE: The riverine unit can contain depressions that are filled with water when the river is not
	flooding.
	$\square$ NO - go to 6 $\boxtimes$ YES – The wetland class is <b>Riverine</b>
6.	Is the entire wetland unit in a topographic depression in which water ponds, or is saturated to the surface, at some time during the year. This means that any outlet, if present, is higher than the interior of the wetland.
	□ NO – go to 7
7.	Is the entire wetland unit located in a very flat area with no obvious depression and no overbank flooding. The unit does not pond surface water more than a few inches. The unit seems to be maintained by high groundwater in the area. The wetland may be ditched, but has no obvious natural outlet.  \[ \sum \text{NO} - \text{go to 8} \] \[ \sum \text{YES} - \text{The wetland class is Depressional} \]
8.	Your wetland unit seems to be difficult to classify and probably contains several different HGM classes. For example, seeps at the base of a slope may grade into a riverine floodplain, or a small stream within a depressional wetland has a zone of flooding along its sides. GO BACK AND IDENTIFY WHICH OF THE HYDROLOGIC REGIMES DESCRIBED IN QUESTIONS 1-7 APPLY TO DIFFERENT AREAS

HGM classes within the wetland unit being rated	HGM Class to Use in Rating
Slope + Riverine	Riverine
Slope + Depressional	Depressional
Slope + Lake-fringe	Lake-fringe
Depressional + Riverine along stream within boundary	Depressional
Depressional + Lake-fringe	Depressional
Salt Water Tidal Fringe and any other class of freshwater wetland	Treat as ESTUARINE under wetlands with special
	characteristics

or more of the total area of the wetland unit being rated. If the area of the class listed in column 2 is less than 10% of the unit, classify the wetland using the class that represents more than 90% of the total area.

If you are unable still to determine which of the above criteria apply to your wetland, or you have more than 2 HGM classes within a wetland boundary, classify the wetland as **Depressional** for the rating.

D	Depressional and Flats Wetlands	Points	
	WATER QUALITY FUNCTIONS - Indicators that wetland functions to improve water quality		
D	D 1. Does the wetland have the potential to improve water quality?	(see p. 38)	
	D 1.1 Characteristics of surface water flows out of the wetland:		
D	Unit is a depression with no surface water leaving it (no outlet)		
	Unit has an intermittently flowing, or highly constricted permanently flowing outlet points = 2		
	Unit has an unconstricted, or slightly constricted, surface outlet (permanently flowing). points = 1	2	
	Unit is a "flat" depression (Q.7 on key), or in the Flats class, with permanent surface outflow and		
	no obvious natural outlet, and/or outlet is a man-made ditch points = 1		
	(If ditch is not permanently flowing treat unit as "intermittently flowing")		
	D 1.2 The soil 2 inches below the surface (or duff layer) is clay or organic (use NRCS definitions).	l .	
D	YES points = 4	4	
	NO points = 0		
	D 1.3 Characteristics of persistent vegetation (emergent, shrub, and/or forest Cowardin class):		
D	Wetland has persistent, ungrazed, vegetation > = 95% of area points = 5	3	
	Wetland has persistent, ungrazed, vegetation >= 1/2 of area points = 3		
	Wetland has persistent, ungrazed vegetation > = 1/10 of area points = 1		
	Wetland has persistent, ungrazed vegetation <1/10 of area		
	D1.4 Characteristics of seasonal ponding or inundation.		
D	This is the area of the wetland unit that is ponded for at least 2 months, but dries out sometime		
	during the year. Do not count the area that is permanently ponded. Estimate area as the		
	average condition 5 out of 10 yrs.  Associated with a point $= 4$	0	
	Area seasonally ponded is > ½ total area of wetland		
	Area seasonally ponded is < ½ total area of wetland		
	NOTE: See text for indicators of seasonal and permanent inundation.		
D	Total for D 1  Add the points in the boxes above	9	
D	D 2. Does the wetland unit have the opportunity to improve water quality?	(see p. 44)	
ע	Answer YES if you know or believe there are pollutants in groundwater or surface water coming	(See p. 44)	
	into the wetland that would otherwise reduce water quality in streams, lakes or groundwater		
	downgradient from the wetland? Note which of the following conditions provide the sources of		
	pollutants. A unit may have pollutants coming from several sources, but any single source would		
	qualify as opportunity.		
	Grazing in the wetland or within 150 ft		
	Untreated stormwater discharges to wetland		
	Tilled fields or orchards within 150 ft of wetland	multiplier	
	A stream or culvert discharges into wetland that drains developed areas, residential		
	areas, farmed fields, roads, or clear-cut logging		
	Residential, urban areas, golf courses are within 150 ft of wetland		
	Wetland is fed by groundwater high in phosphorus or nitrogen		
	Other		
	YES multiply score in D 1. by 2 NO multiply score in D 1. by 1		
D	TOTAL - Water Quality Functions Multiply the score from D1 by D2	18	
	Add score to table on p. 1		

D	Depresssional and Flats Wetlands			
	HYDROLOGIC FUNCTIONS - Indicators that wetland functions to reduce flooding and stream degradation			
	D 3. Does the wetland have the potential to reduce flooding and erosion?	(see p. 46)		
D	D 3.1 Characteristics of surface water flows out of the wetland unit			
	Unit is a depression with no surface water leaving it (no outlet) points = 4			
	Unit has an intermittently flowing, or highly constricted permanently flowing outlet points = 2			
	Unit has an unconstricted, or slightly constricted, surface outlet (permanently flowing), points = 1	_		
	Unit is a "flat" depression (Q.7 on key), or in the Flats class, with permanent surface outflow and	2		
	no obvious natural outlet, and/or outlet is a man-made ditch			
	(If ditch is not permanently flowing treat unit as "intermittently flowing")			
	Unit has an unconstricted, or slightly constricted, surface outlet (permanently flowing). points = 0			
D	D 3.2 Depth of storage during wet periods			
	Estimate the height of ponding above the bottom of the outlet For units with no outlet measure from			
	the surface of permanent water or deepest part (if dry).			
96	Marks of ponding are at least 3 ft or more above the surface or bottom of outlet points = 7			
	The wetland is a "headwater" wetland"	5		
	Marks of ponding between 2 ft to < 3 ft from surface or bottom of outlet points = 5	3		
	Marks are at least 0.5 ft to < 2 ft from surface or bottom of outlet points = 3			
	Unit is flat (yes to Q.2 or Q.7 on key) but has small depressions on the surface that			
	trap water			
_	Marks of ponding less than 0.5 ft			
D	D 3.3 Contribution of wetland unit to storage in the watershed			
	Estimate the ratio of the area of upstream basin contributing surface water to the wetland to the			
	area of the wetland unit itself.			
	The area of the basin is less than 10 times the area of the unit points = 5	5		
	The area of the basin is 10 to 100 times the area of the unit points = 3			
	The area of the basin is more than 100 times the area of the unit			
_	Entire unit is in the FLATS class points = 5			
D	Total for D 3  Add the points in the boxes above	12		
D	D 4. Does the wetland unit have the opportunity to reduce flooding and erosion?	(see p. 49)		
	Answer YES if the unit is in a location in the watershed where the flood storage, or reduction in			
	water velocity, it provides helps protect downstream property and aquatic resources from flooding			
	or excessive and/or erosive flows. Answer NO if the water coming into the wetland is controlled			
	by a structure such as flood gate, tide gate, flap valve, reservoir etc. OR you estimate that more than			
	90% of the water in the wetland is from groundwater in areas where damaging groundwater			
	flooding does not occur.			
	Note which of the following conditions apply.			
	Wetland is in a headwater of a river or stream that has flooding problems			
	Wetland drains to a river or stream that has flooding problems	multiplier		
	Wetland has no outlet and impounds surface runoff water that might otherwise flow into	2		
	a river or stream that has flooding problems	2		
	Other			
	▼YES multiplier is 2    ■ NO multiplier is 1  ■ NO multiplier is 2  ■ NO multiplier is 2  ■ NO multiplier is 3  ■ NO multiplier is 4  ■ NO multiplier is 5  ■ NO multiplier is 4  ■ NO multiplier is 5  ■ NO multiplier is 6  ■ NO multiplier is 6  ■ NO multiplier is 7  ■ NO multiplier is 7  ■ NO multiplier is 8  ■ NO multiplier is 8  ■ NO multiplier is 9  ■ NO multiplie			
D	<b>TOTAL</b> - Hydrologic Functions Multiply the score from D 3 by D 4			
	Add score to table on p. 1	24		

H 1.4. Interspersion of habitats (see p. 76)  Decided from the diagrams below whether interspersion between types of vegetation (described in H 1.1), or vegetation types and unvegetated areas (can include open water or mudflats) is high, medium, low, or none.  None = 0 points	3
H 1.5. Special Habitat Features: (see p. 77)  Check the habitat features that are present in the wetland. The number of checks is the number of points you put into the next column.  □ Large, downed, woody debris within the wetland (>4in. diameter and 6 ft long).  □ Standing snags (diameter at the bottom > 4 inches) in the wetland  □ Undercut banks are present for at least 6.6 ft (2m) and/or overhanging vegetation extends at least 3.3 ft (1m) over a stream for at least 33 ft (10m)  □ Stable steep banks of fine material that might be used by beaver or muskrat for denning (>30degree slope) OR signs of recent beaver activity are present  □ At least ¼ acre of thin-stemmed persistent vegetation or woody branches are present in areas that are permanently or seasonally inundated (structures for egg-laying by amphibians)  □ Invasive plants cover less than 25% of the wetland area in each stratum of plants	4
H 1. TOTAL Score - potential for providing habitat  Add the scores from H1.1, H1.2, H1.3, H1.4, H1.5	16

H 2. Does the wetland have the opportunity to provide habitat for many species?	
H 2.1 Buffers (see p. 80)  Choose the description that best represents condition of buffer of wetland. The highest scoring criterion that applies to the wetland is to be used in the rating. See text for definition of "undisturbed."  100 m (330ft) of relatively undisturbed vegetated areas, rocky areas, or open water >95% of circumference. No developed areas within undisturbed part of buffer.  (relatively undisturbed also means no-grazing)	1
(e.g. tilled fields, paving, basalt bedrock extend to edge of wetland	2

Н23	Near or adjacent to other priority habitats listed by WDFW (see p. 82)	1	
11 Z.	Thich of the following priority habitats are within 330ft (100m) of the wetland?		
//	ee text for a more detailed description of these priority habitats)		
	Dinarian: The area ediscort to a vi est priority habitats)		
	Riparian: The area adjacent to aquatic systems with flowing water that contains elements of both		
	aquatic and terrestrial ecosystems which mutually influence each other.		
1	Aspen Stands: Pure or mixed stands of aspen greater than 0.8 ha (2 acres).		
ᄖ	Cliffs: Greater than 7.6 m (25 ft) high and occurring below 5000 ft.		
	Old-growth forests: (Old-growth west of Cascade crest) Stands of at least 2 tree species, forming a		
	multi-layered canopy with occasional small openings; with at least 20 trees/ha (8 trees/acre) > 81 cm		
	(32 in) dbh or > 200 years of age.		
	Mature forests: Stands with average diameters exceeding 53 cm (21 in) dbh; crown cover may be		
i	less that 100%; crown cover may be less that 100%; decay, decadence, numbers of snags, and		
1	quantity of large downed material is generally less than that found in old-growth; 80 - 200 years old		
l	west of the Cascade crest.		
	Prairies: Relatively undisturbed areas (as indicated by dominance of native plants) where grasses		
	and/or forbs form the natural climax plant community.		
	Talus: Homogenous areas of rock rubble ranging in average size 0.15 - 2.0 m (0.5 - 6.5 ft),		
	composed of basalt, andesite, and/or sedimentary rock, including riprap slides and mine tailings.		
	May be associated with cliffs.		
	Caves: A naturally occurring cavity, recess, void, or system of interconnected passages		
	Oregon white Oak: Woodlands Stands of pure oak or oak/conifer associations where canopy		
	coverage of the oak component of the stand is 25%.		
$\boxtimes$	Urban Natural Open Space: A priority species resides within or is adjacent to the open space and	4	
	uses it for breeding and/or regular feeding; and/or the open space functions as a corridor connecting	·	
	other priority habitats, especially those that would otherwise be isolated; and/or the open space is an		
	isolated remnant of natural habitat larger than 4 ha (10 acres) and is surrounded by urban		
	development.		
	Estuary/Estuary-like: Deepwater tidal habitats and adjacent tidal wetlands, usually semi-enclosed		
	by land but with open, partly obstructed or sporadic access to the open ocean, and in which ocean		
	water is at least occasionally diluted by freshwater runoff from the land. The salinity may be		
	periodically increased above that of the open ocean by evaporation. Along some low-energy		
	coastlines there is appreciable dilution of sea water. Estuarine habitat extends upstream and landward		
ř	to where ocean-derived salts measure less than 0.5% during the period of average annual low flow.		
	Includes both estuaries and lagoons.		
	Marine/Estuarine Shorelines: Shorelines include the intertidal and subtidal zones of beaches, and		
_	may also include the backshore and adjacent components of the terrestrial landscape (e.g., cliffs,		
	snags, mature trees, dunes, meadows) that are important to shoreline associated fish and wildlife and		
	that contribute to shoreline function (e.g., sand/rock/log recruitment, nutrient contribution, erosion		
	control).		
	If wetland has 3 or more priority habitats = 4 points		
	If wetland has 2 priority habitats = 3 points		
	If wetland has 1 priority habitat = 1 point		
	No habitats = 0 points		
Note: All vegetated wetland are by definition a priority habitat but are not included in this list. Nearby			
и	vetlands are addressed in question H2.4.		
	Tobal Tobal Manager Ave. 11		

H 2.4 Wetland Landscape (choose the one description of the landscape around the wetland that best fits)  (see p. 84)  There are at least 3 other wetlands within ½ mile, and the connections between them are relatively undisturbed (light grazing between wetlands OK, as is lake shore with some boating, but connections should NOT be bisected by paved roads, fill, fields, or other development	3
H 2. TOTAL Score - opportunity for providing habitat  Add the scores from H2.1, H2.2, H2.3, H2.4	10
TOTAL for H1 from page 14	16
Total Score for Habitat Functions – add the points for H 1, H 2 and record the result on p. 1	26



**DATE** JUNE 2, 2016

TO HANS EHLERT, PWS, CF, CFM, CH2M

FROM LAURA RUPPERT, PE, JOSH VAN WIE, PE, OSBORN CONSULTING, INC.

SUBJECT UPPER KELSEY CREEK - BANKFULL WIDTH MEMORANDUM



## **BACKGROUND**

This memo documents the methodology for sizing the opening width for the proposed crossing at Upper Kelsey Creek near Larsen Lake in Bellevue, Washington. The site is located on property owned by the City of Bellevue, and the proposed project will replace an existing pedestrian trail culvert crossing with a bridge. A site map is provided in **Figure 1**.

#### WDFW SIZING GUIDELINES

The Washington State Department of Fish and Wildlife has published guidelines for stream crossings in the Water Crossing Design Guidelines (WDFW, 2013). The guidelines offer several options for crossing design, including no-slope culverts, stream simulation, and hydraulic design. In general, stream simulation is the preferred design methodology. The intent of stream simulation design is to create a channel with natural stream characteristics and habitat that will encourage fish passage.

The opening width for a proposed culvert or bridge crossing is determined using the bankfull width of the natural stream near the crossing location. The bankfull width is defined as the top width of the channel at the point where the bank meets the floodplain. The opening width is calculated using the following equation:

W<sub>culvert bed</sub> = 1.2 W<sub>ch</sub> + 2 (in feet)

W<sub>culvert bed</sub> is the opening width, and W<sub>ch</sub> is the channel bankfull width. The design guidelines specify that bankfull width measurements should be taken at stream cross sections that represent normal stream conditions at straight channel sections. The measurements should also be outside the influence of an existing culvert or any artificial or unique channel constrictions. The design guidelines recommend using an average bankfull width from at least three locations and to collect measurements both upstream and downstream of the crossing.

#### SITE OBSERVATIONS AND BANKFULL WIDTH MEASUREMENTS

A site visit was performed on May 27, 2016 to collect bankfull width measurements. The majority of the stream channel upstream of the culvert was enclosed by trees on both banks. The stream was also overgrown by tall grass in a number of areas. The upstream channel flows from the south and makes a 90-degree bend at the culvert inlet. A high-flow bypass channel also connects at the 90-degree bend, and routes a portion of the flow to the north to bypass the lake during larger storm events. The bypass channel was observed to have standing water at the time of the site visit.

The existing crossing consists of five 18-inch diameter culverts. A drop of approximately 2 feet was observed from the pipe outlets to the water surface at the time of the site visit. The channel was observed to be 14 feet wide at the culvert outlet and immediately narrows down to approximately 3 feet in width. The downstream channel was lined with grass and appeared to be maintained by mowing. Evidence of undercutting was observed in several places in the downstream channel (BFW measurement included the uncut distance, if present). The streambed sediment in both the upstream and downstream sections was observed to be fine silty material. No areas of gravel were observed during the site visit.

The downstream channel continues approximately 300 feet from the crossing and then connects to Larsen Lake. The channel widens out near the lake likely due to backwater from the lake, which is controlled by a flow restrictor.

Bankfull width measurements were taken both upstream and downstream of the existing culvert. Measurements from the upstream channel are conservative because the stream is designed to partially bypass the culvert during larger storm events. The measurements used in calculating bankfull width are provided in **Table 1**, and photos of the bankfull width locations are provided at the end of this document. The resulting average bankfull width was calculated to be 4.5 feet.

Table 1   Bankfull Width Field Measurements					
Location	Width (ft)	Notes			
BFW 1	7	Upstream of the culvert 650 feet at pedestrian bridge crossing. Channel narrowed to 3.5 feet downstream of bridge.			
BFW 2	7	Upstream of the culvert 230 feet. Channel was overgrown with tall grass			
BFW 3	3.5	Upstream of the culvert 60 feet. Channel was overgrown with tall grass.			
BFW 4	14.0	Measurement taken at culvert outlet. The measurement was not used in determining average bankfull width because the channel width is influenced by the existing culvert.			
BFW 5	3.0	Downstream of the culvert 30 feet. The banks were covered with short grass.			
BFW 6	3.0	Downstream of the culvert 60 feet. The banks were covered with short grass.			
BFW 7	3.5	Downstream of the culvert 90 feet. The banks were covered with short grass.			
BFW 8	<del>9.0</del>	Downstream of the culvert 250 feet. The measurement was not used in determining average bankfull width because the channel is in a backwater condition from the lake.			

# **BANKFULL WIDTH REGRESSION EQUATION**

The WDFW guidelines provide a regression equation that may be used to estimate bankfull width based on watershed characteristics. The equation was developed using data from a variety of high gradient (greater than 2%), course bedded (gravel bed material or coarser) streams in western Washington. The guidelines state that the equation is useful for determining whether field bankfull width measurements are within a reasonable range. However, the regression equation should not be used in place of actual field measurements. The regression equation is as follows:

$$W_{ch} = 0.95 \times (WA)^{0.45} \times (AAP)^{0.61}$$

W<sub>ch</sub> is the channel bankfull width, WA is the watershed area in square miles, and AAP is the average annual precipitation in inches per year.

The watershed area was found to be 0.55 square miles based on King County GIS contour data, and the average annual precipitation was found to be 45.8 inches per year based on data from the USGS Stream Stats online database. Based on these inputs, the regression equation predicted a bankfull width of 7.5 feet. WDFW specifies that there is a 16% standard error associated with the equation, which results in an expected bankfull width in the range of 6.3 feet to 8.7 feet. Results of the regression equation are provided in **Table 2**.

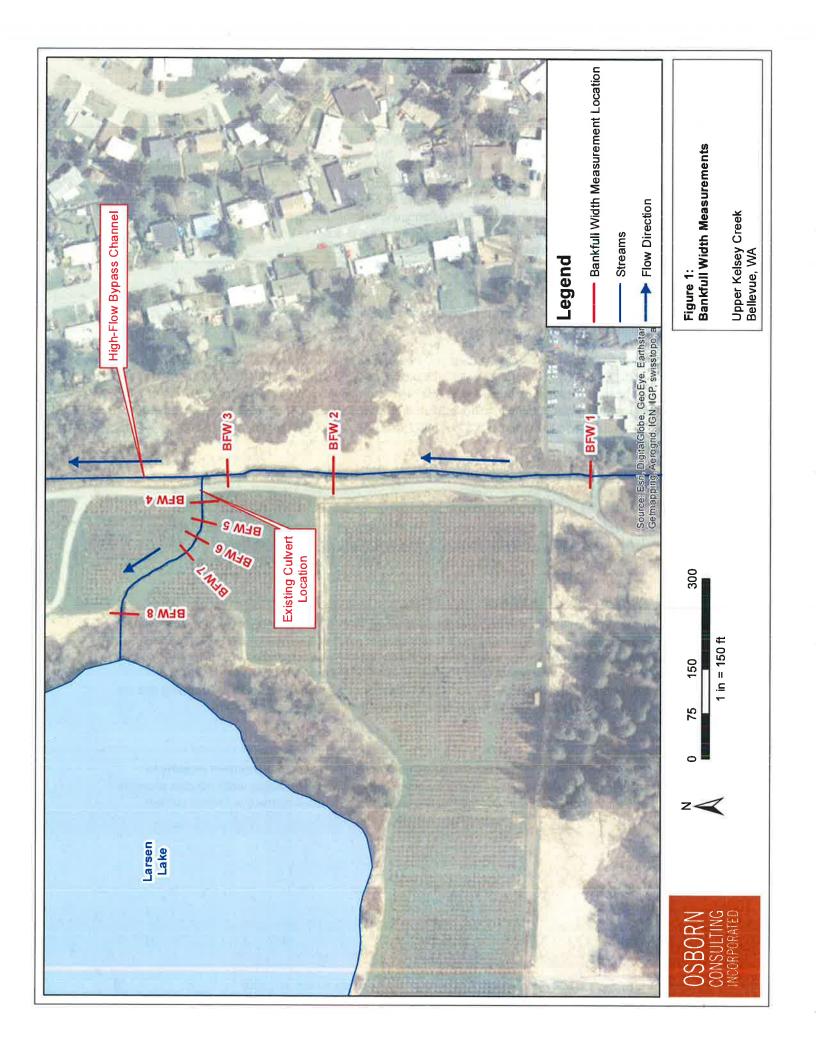
Table 2   WDFW Regression Equation				
Watershed Area (sq. mi.)	Average Annual Precip. (in/yr)	Regression Bankfull Width (ft)	Regression Bankfull Width Range (ft)	
0.55	45.8	7.5	6.3 to 8.7	

#### RECOMMENDED CROSSING WIDTH

The bankfull width measured in the field was found to be 4.5 feet. The existence of the high-flow bypass causes the main channel to be smaller than the estimated bankfull width predicted by the regression equation. Because the exact functionality of the high-flow bypass was not studied in detail, it is recommended that a conservative value of 7.5 feet be used for the bankfull width. This will allow adequate capacity for flows if a larger percentage of upstream flow is routed through the crossing and not through the high-flow bypass. The following equation gives the resulting crossing width:

$$W_{culvert bed} = 1.2 \times 7.5 + 2 = 11 \text{ feet}$$

The 11 foot width will provide conservative capacity for flows and will allow the proposed crossing to closely match the other existing crossings in the Larsen Lake area. The crossing width will also allow the proposed stream to more closely match the existing culvert width created by the five 18-inch culverts.





BFW 1: From above, facing downstream



BFW 2: Facing downstream



BFW 3: Facing downstream



BFW 4: Facing upstream at culvert outlet



BFW 5: Facing upstream



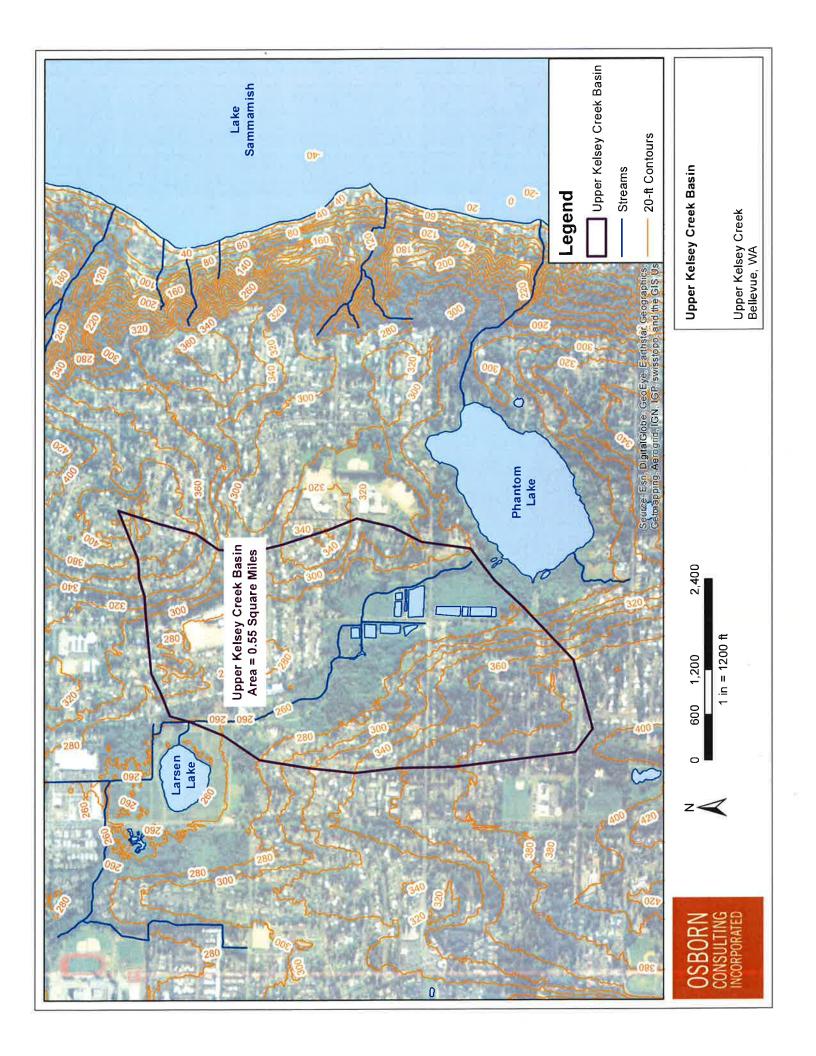
BFW 6: Facing upstream



BFW 7: Facing upstream



BFW 8: Facing upstream





# **Utilities Engineering Department** Memorandum

Received

FEB 2 2 2017

Permit Processing

Date:

February 22, 2017

To:

Reilly Pittman, Associate Planner, Development Service Division

From:

Jerry Shuster P.E., CFM, Utilities Engineering

**Subject:** 

Upper Kelsey Creek Stream Channel Improvement project

Federal Emergency Management Agency (FEMA) Biological Opinion Compliance

The aforementioned project will replace five 18 inch diameter culverts with one 14 foot long, 10 feet wide pedestrian bridge in Larsen Lake Greenbelt Park (east of 148th Ave SE and north of SE 8th St).



Project Location



Existing Culverts and Parks Trail

The work will be done within the FEMA special flood hazard area (SFHA) for Kelsey Creek (Flood Insurance Rate Map number 53033C0657F, effective May 16, 1995 as modified by Letter of Map Revision (LOMR) Case number 03-10-0399P).

All work for this project within the FEMA SFHA is within the jurisdiction of the U.S. Army Corps of Engineers Federal permitting authority (Section 404 - Discharges of dredged or fill material to waters of the U.S., including wetlands). The Joint Aquatic Permit Application (JARPA) for this project includes a Special Project Information Form to notify to the Army Corps of Engineers that the activities planned for this project fall within one of the nine restoration activities considered by National Marine Fisheries Service (NMFS) and the U.S. Fish and Wildlife Service (USFWS) during its Section 7 of the Endangered Species Act (ESA) consultation. The NMFS and USFWS issued a joint biological opinion that concluded the nine restoration actions are not likely to jeopardize ESAs potentially found within the project area (see reference).

#### Reference

US Department of Commerce, National Marine Fisheries Service, US Department of Interior, Fish and Wildlife Service. 2008. Endangered Species Act Section 7 Formal Consultation and Magnuson-Stevens Fishery Conservation and Management Act Essential Fish Habitat Consultation for the Washington State Fish Passage and Habitat Enhancement Restoration Programmatic. NMFS Tracking No. 2008/03598, FWS No. 13410-2008-FWS # F-0209. July 8.